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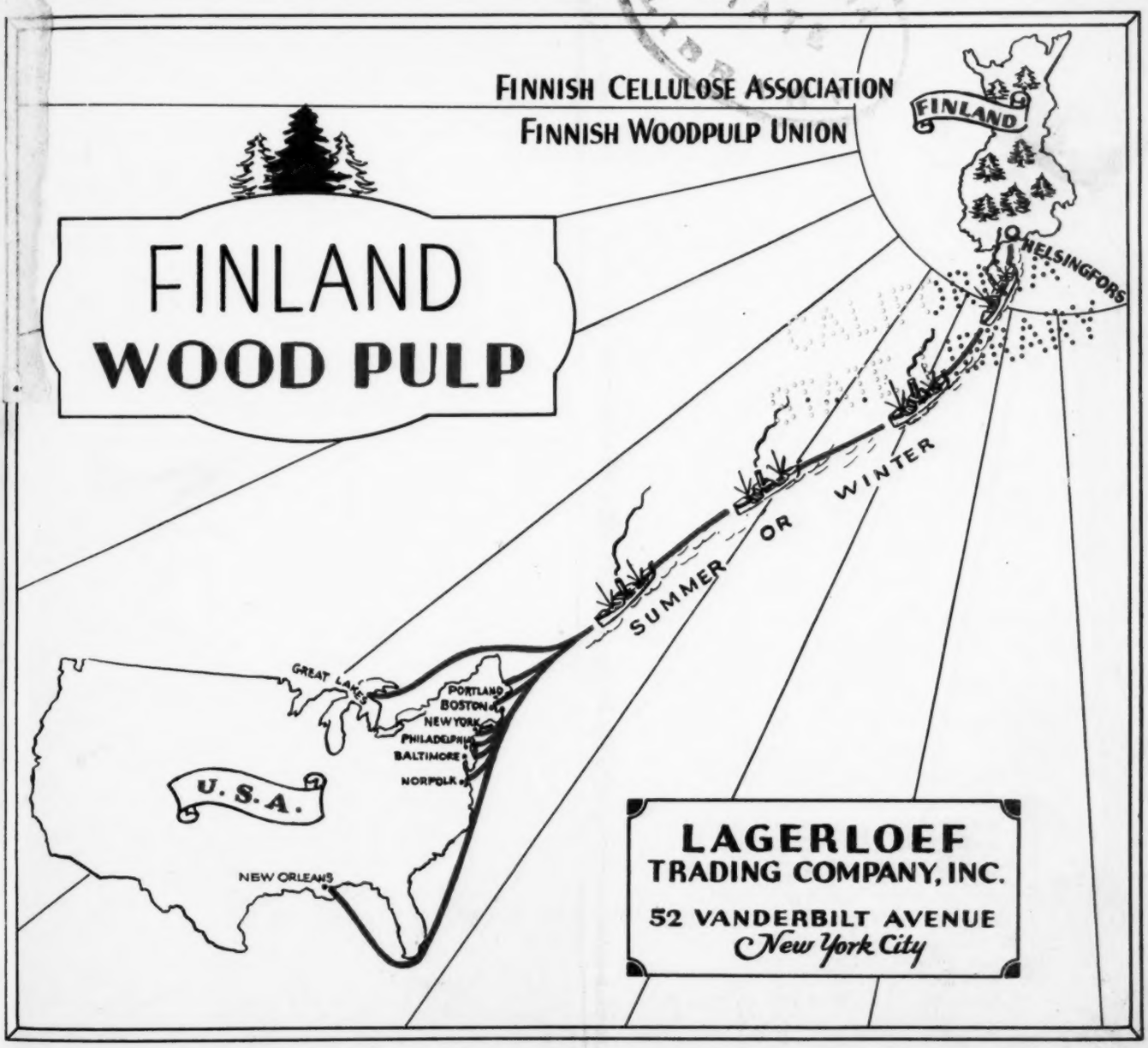
PAPER TRADE JOURNAL

Vol. XCVIII JANUARY 4, 1934 No. 1



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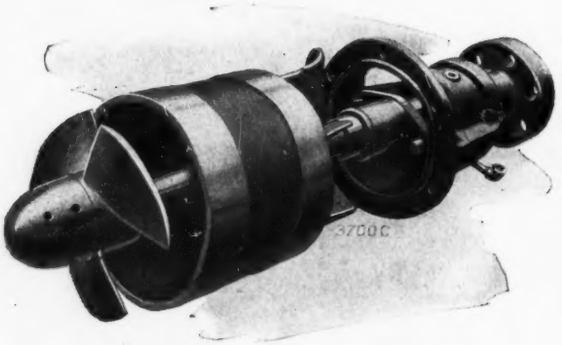

Propeller, shaft and bearing. The renewable sleeve, which protects the casing from wear, and the guide vanes are here shown moved back from their working positions in order to show the propeller.

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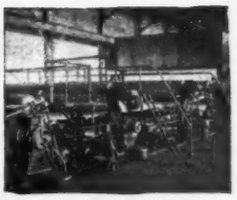

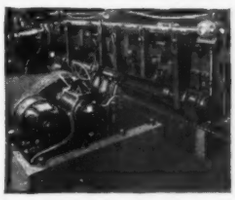
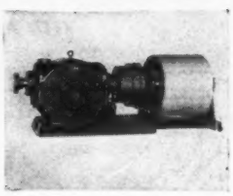

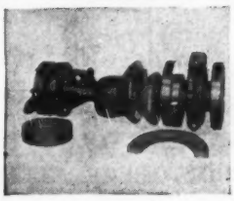

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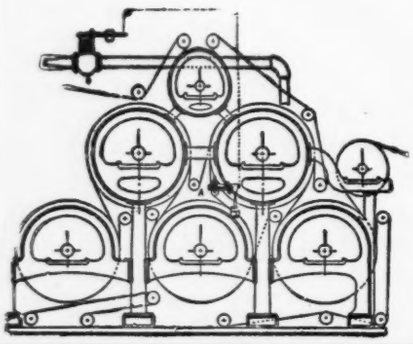

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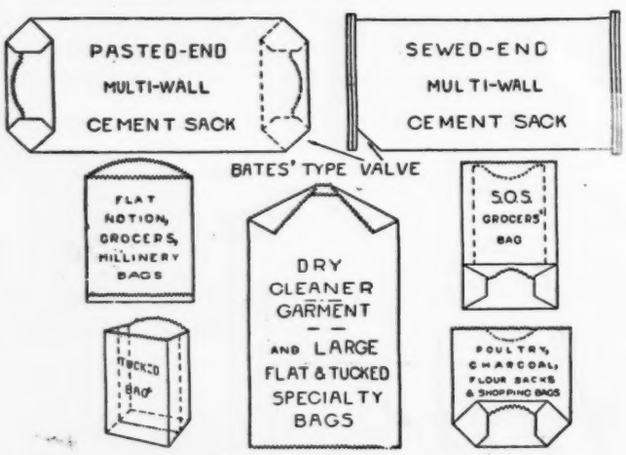

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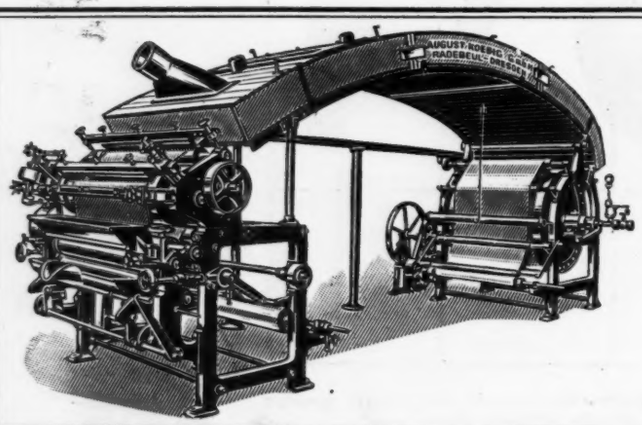

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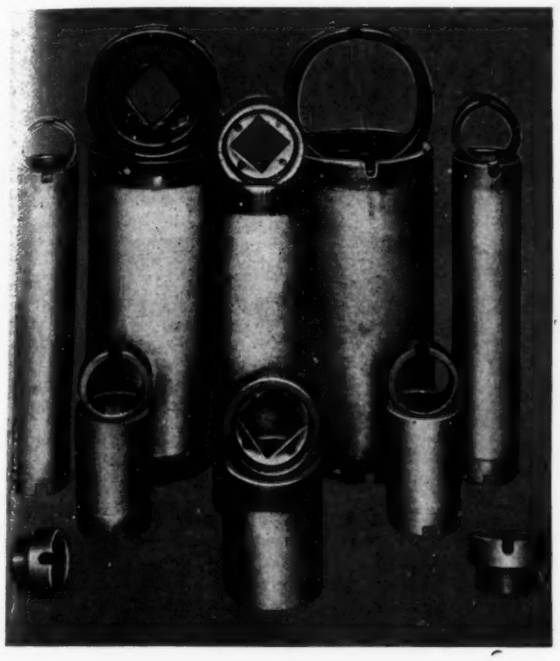

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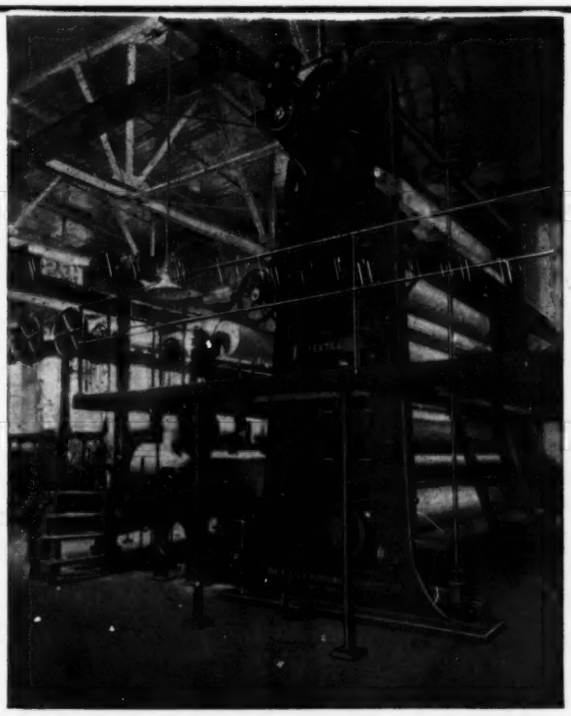

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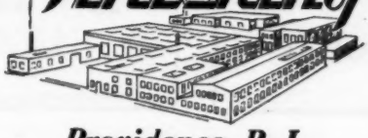

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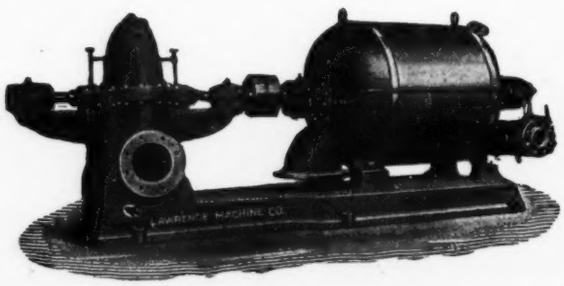

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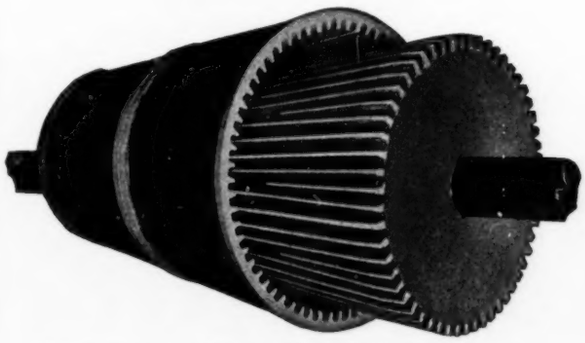

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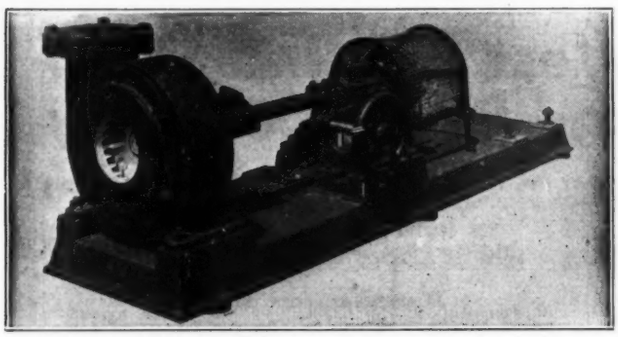

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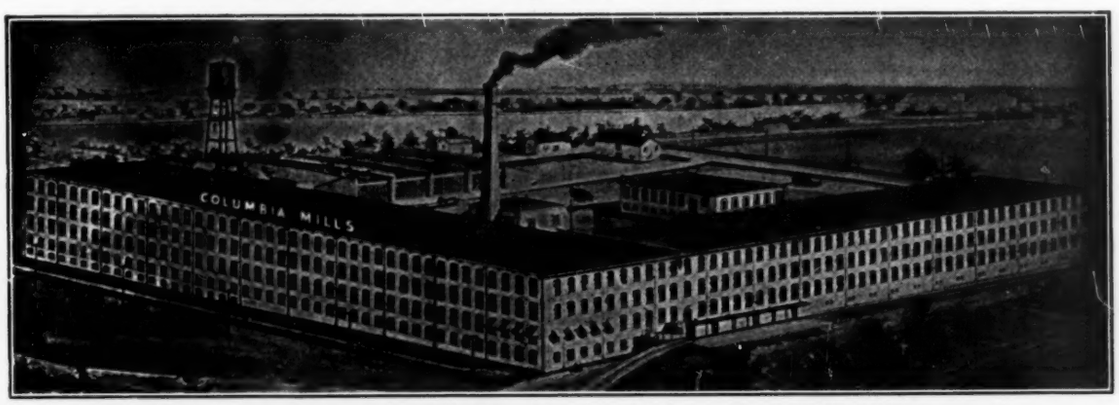

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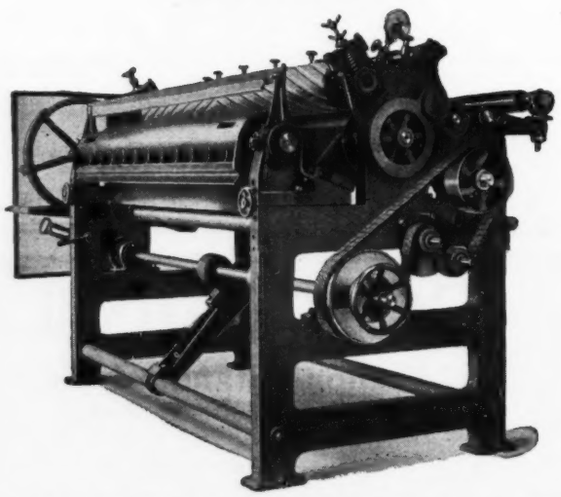

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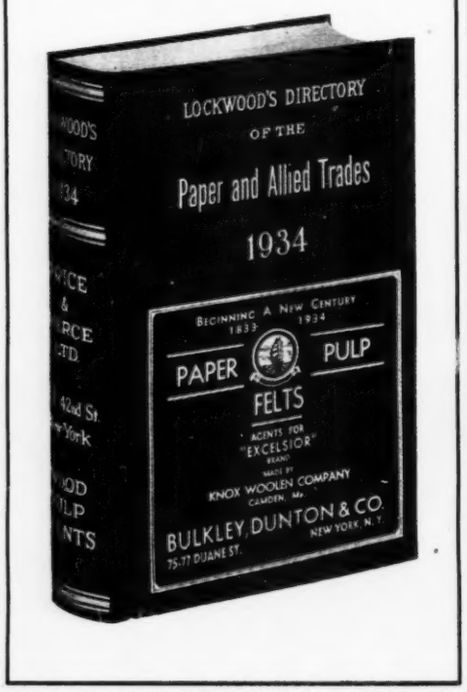

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SIXTY-SECOND YEAR

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

Published Every Thursday by the LOCKWOOD TRADE JOURNAL CO., Inc.

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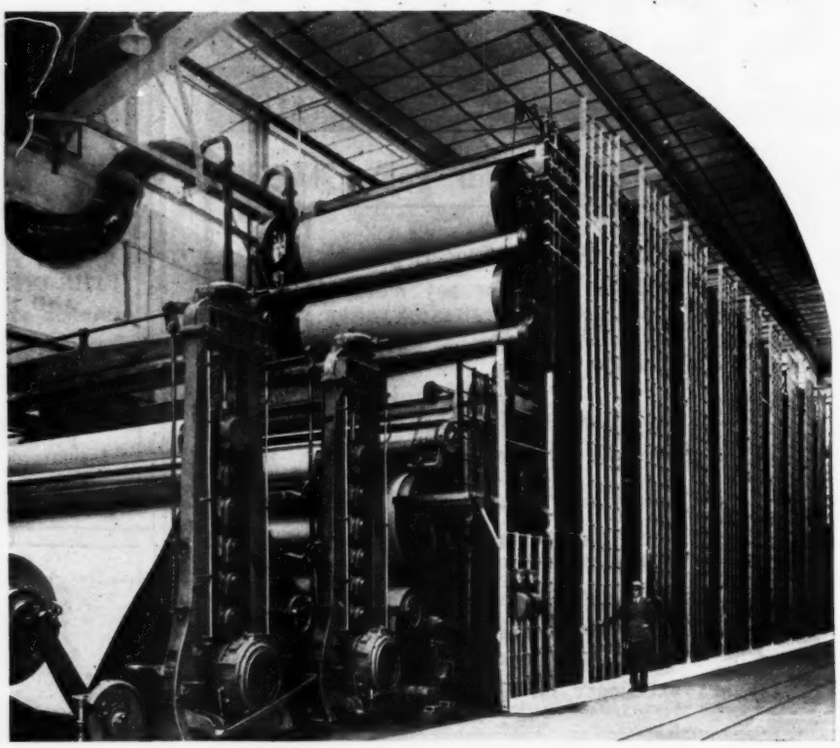

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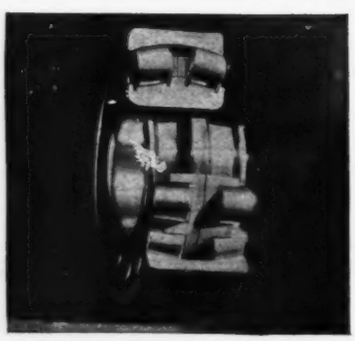

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Vol. XCVIII, No. 1 — Thursday, January 4, 1934

Code For Paper Distributing Trade Is Signed

Code Provides for a Standard 40-Hour Week for All Employees Except Watchmen, Outside Delivery Men and Executives, With a Provision for Not More Than Eight Extra Hours in a Week for Which Time and One-Third Shall Be Paid—The Minimum Wage Under the Code Shall Be From $14. to $15. Per Week

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., January 3, 1934—The paper distributing trade code has been signed by the President and became effective on January 1.

The code provides for a standard 40-hour week for all employees except watchmen, outside delivery men, and executives, with a provision for not more than 8 extra hours in a week for which time and one-third shall be paid. Virtually all employees of this Trade are of the warehouse and office class, and are paid on a weekly basis. This minimum wage under the code will be from $14 to $15, depending on the size of the city in which the employer's business is located. A minimum wage of 37½ cents per hour for men, and 34 cents for women, is prescribed for about 100 employees engaged in incidental processing who are employed on an hourly basis.

The Trade comprises some 1,000 establishments and employs approximately 20,000 persons. It is estimated that the code will increase employment about 15 per cent, while raising the minimum wage rate.

The revised code as of December 8 is as follows:

Article I.

To effectuate the policies of Title I of the National Industrial Recovery Act the following is hereby submitted as a code of fair competition for the paper distributing trade, and upon approval by the President its provisions shall be the standards of fair competition for such trade and shall be binding upon every member thereof.

Article II. Definitions.

TRADE—The business of distribution by "wholesalers" or "distributors" of any or all lines of paper and paper products in the United States, its territories and possessions, with the incidental processing of such products usual and ordinary in such trade. A "wholesaler" or "distributor" for the purpose of this code shall be defined as a person or firm, or a definitely organized division thereof, which buys and maintains at his or its place of business a stock of the lines of merchandise which it distributes, or which although not maintaining such stock buys such merchandise and in the sales thereof assumes credit risk; and which through salesmen, advertising and/or sales promotion devices sells to retailers and/or institutional, commercial and/or industrial users, but which does not sell in significant amounts to ultimate consumers.

MEMBER—A natural person, partnership, corporation, association, trust, trustee, trustee in bankruptcy or receiver, engaged in such trade.

ULTIMATE CONSUMER—The term "ultimate consumer" as used herein is defined as a purchaser for home and personal use and not for use or consumption in trade or business or by institutions.

EMPLOYEE—The term "employee" as used herein includes anyone engaged in the trade in any capacity receiving compensation for his services, irrespective of the nature or method of payment of such compensation.

EMPLOYER—The term "employer" as used herein includes anyone by whom such employee is compensated or employed.

PRESIDENT, ACT, ADMINISTRATOR—The terms "President," "Act" and "Administrator" as used herein shall mean, respectively, the President of the United States, the National Industrial Recovery Act, and the Administrator appointed under Title I of said Act.

ASSOCIATION—The National Paper Trade Association of the United States.

Population for the purposes of this Code shall be determined by reference to the 1930 Federal Census.

Article III. Subordination.

1. If and when a General Code for the Wholesaling and Distributing Trade, hereinafter referred to as the General Code, shall have been approved by the President and shall become effective, this Code shall become subordinate to such General Code and shall be deemed a supplemental Code for the Paper and Paper Products Commodity Division thereunder.

2. Such General Code shall, when so approved, be recognized as binding in this Trade upon all the members thereof, and the Code Authority designated in this Code shall constitute the Divisional Code Authority for the Paper and Paper Products Commodity Division under the General Code, and shall have the powers prescribed for such Divisional Code Authority in the General Code.

3. In the event that any provisions of this Code shall be found to be inconsistent with the provisions of such

(Continued on page 21)

News Print Paper Production Gains in Canada

Output During First Eleven Months of 1933 Totalled 1,833,000 Tons, Compared With 1,780,000 Tons in Corresponding Period of Preceding Year—While Increase Amounted to 53,000 Tons, Values Declined—Additions Made to Developed Water Powers

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 2, 1934—Recovery is, on the whole, the key word to be used in describing the economic condition of Canada at the opening of 1934, though the recovery is as yet in its earlier stages. At the close of 1933 the Dominion still stood fifth among the nations of the world in the value of her exports, the only countries ahead of Canada in value of exports being the four great industrial countries, the United States, the United Kingdom, France and Germany. The favorable balance of visible merchandise trade is $104,940,000 in the elapsed eight months of the fiscal year to November 30, as compared with $45,126,000 in the same period of the previous fiscal year.

While agriculture is still in a precarious position there has been a remarkable expansion in general industrial production, and especially in the production of gold, nickel and other minerals.

Forestry production, after long repression, has revived very considerably in recent months, owing to the opening up of markets in the United Kingdom and the United States.

News print production in the first 11 months of 1933 has totaled 1,833,000 tons, as compared with 1,780,000 tons in the same period of last year—an increase of 53,000 tons, though values have declined. Exports of both unmanufactured and manufactured wood are also on the increase, owing largely to the current necessities in the United States and to the preferences accorded by the United Kingdom.

Substantial additions have been made to the developed water powers of Canada in 1933. In recent months the average daily output of electric power has been on the increase, and in October reached the highest figure yet recorded in the Dominion, namely, 51,265,000 kilowatt hours per day, an increase of 16.6 per cent over the same month in 1932.

Employment Increases

As to employment, the increases between the low point of April 1 and December 1 have added 147,000 workers to the staffs of some 8,400 reporting firms, and it is estimated that this represents an increase of some 300,000 employed workers in the Dominion as a whole in the last eight months. The general index of employment, standing at 91.8 at December 1, 1933, was then at the highest level in the past two years, though it is still more than 8 per cent below that of the base year 1926. The total amount of bank debits at the clearing house centres in Canada in the first eleven months of 1933 aggregated $27,490,000,000, as compared with $23,760,000,000 in the same period of 1932, being a gain of 15.7 per cent.

Paper Exports Larger

News print exported from Canada in November, amounting to 3,425,850 cwt., valued at $5,828,878, showed an increase in volume but a decrease in value compared with those of November, 1932, when they were 3,071,376 cwt., at $6,631,241. Last month news print went to 29 countries, of which the United States took the largest amount, namely, 2,711,428 cwt., valued at $4,914,872.

Canadian exports of wood pulp and screenings in November totaled 1,165,387 cwt., valued at $2,227,443, recording a considerable increase over the October export of 1,122,475 cwt. valued at $2,214,662, and the November, 1932, export of 1,002,605 cwt. at $1,813,885. The bulk of the export 1,008,500 cwt. valued at $1,894,454, went to the United States.

The total export of paper and manufactures of paper amounted in value to $6,157,437, compared with $6,602,255 in October, 1933, and $6,857,929 in November last year. The export to United States was valued at $4,953,408. The total exported in the 12 months ended November was $71,635,446, compared with $89,033,979 in the previous 12 months.

F. Pagenstecher Joins Nepco Staff

Appointment of Felix Pagenstecher of Kalamazoo, Mich., to the executive personnel of the Nekoosa-Edwards Paper Company, was announced this morning by John E. Alexander, first vice-president and general manager of the company at the offices in Port Edwards. Mr. Pagenstecher will become a vice president of the company and will be active in general executive capacities. He will assume his new duties on January 2 and will soon move with his family to Port Edwards, where they will make their residence says *The Wisconsin Rapids Daily Tribune.*

Mr. Alexander notified the paper trade of the appointment of Mr. Pagenstecher in a letter just mailed out in which he said the new executive "has become associated with us in an official capacity for the purpose of supplementing our present organization in a way that is intended to enable us to render added service to our customers in the industry. In making this announcement it is our wish to emphasize that there is no intention of making any changes in our personnel or in our policies because the success of both are recognized by us, through the substantial support they are getting.

"Mr. A. R. Jackson, our sales manager, will, as heretofore, continue to supervise the sale of our entire product, including the wrapping, fine paper and specialty grades."

In supplementing the above statement Mr. Alexander said, "We are genuinely fortunate in having Mr. Pagenstecher join our organization. I have known of him for some time, recognized his valuable experience in the paper industry and feel we have made an excellent selection. We are happy that he has chosen to accept our invitation to come to Port Edwards and bring with him a wealth of experience and ability."

Mr. Pagenstecher, according to Mr. Alexander, was formerly manager of the Riverview Coated Paper Company, Kalamazoo, Mich. For 12 years he was president of the Bryant Paper Company, also of Kalamazoo. He resigned his position there to go to Portland, Ore., where he was president of the Hawley Pulp and Paper Company, which position he held until a merger of the Hawley mills and other western companies. He returned to Kalamazoo a year and one-half ago to rejoin the Bryant Company in a sales capacity, from which position he is resigning to accept the invitation of Mr. Alexander to come to the Nepco mills in executive capacities.

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Demand for Paper Encouraging in Chicago

Fine Paper Distributors Experience Much Better December Than in 1932—Book Paper Tonnage Moving at Increased Speed, With Quotations More Stable—Kraft Wrapping Paper Comparatively Slow—News Print and Ground Wood Papers Stronger

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., January 1, 1934—The seven days between Christmas and New Year have never been known to produce much activity in the Chicago paper market. This year seems to be an exception, even though it is doubtful whether or not merchants and manufacturers' representatives know where they stand in the matter of prices. Hours have been spent in preparing prices on goods sold from mills to merchants, and the merchants, in turn, are cooperating with the mills in spending additional hours in figuring out resale prices.

While this hectic work has been going on a comparatively small but encouraging demand is noticeable. Fine paper merchants are reporting a much better December than in 1932 and even while actual price figures are not yet clear, much merchandise is being sold. The book paper market, a bit more stabilized as to its price situation, is slowly increasing its speed although buyers continue hesitant until after inventory periods. Kraft markets are comparatively slow although advance interest shows good prospects immediately following inventory period. Ground wood reports show much activity in revision of prices although actual demand has not yet improved to an appreciable extent, according to reports. The outlook for news print is reported better. Board demand is holding its own, container varieties and corrugated having been helped materially by repeal. There is little activity in waste papers.

Mill representatives in the Chicago area are pleased over the possibility that the code will bring about the near elimination of hand-to-mouth buying, a procedure that has been decidedly costly for many years, particularly since the advent of prompt delivery systems. Heretofore, while paper merchants have been compensated by higher prices for the breaking up of cartons into small lots, the mills have not had the same compensation for something they found increasingly popular—and costly—year after year. Now, under the code of fair practices, cartons will be the smallest unit sold and there will be no room for debate in those grades of paper operating under these provisions. The process of splitting sealed cartons into small lots has in the past necessitated a lot of overhead expense which, in many cases, has been reported as perilously near the difference between profit and loss. Without this provision it is reported in the Chicago area that mills would have been in an unfortunate position of trying to fill small hand-to-mouth buying requests while forced to absorb much higher overhead and production expense brought about by code provisions as to wages, hours of labor, etc. Thus the elimination of a perplexing problem plus an upward revision of prices based on actual production costs is going to help materially in bringing mills back to a profit basis even after taking care of increased overhead.

This is one of the reasons why Chicago representatives, even while working nights to revise prices to merchants and resale prices as well, have felt kindly toward the "new deal" in general and have cooperated to the utmost in putting over the entire program.

Association Activities

The Chicago Paper Association is to hold its first meeting of the New Year on Tuesday, January 9, at the Blackstone Hotel. Under the leadership of President M. A. McNulty, the meeting will undoubtedly take up immediate problems concerning the local market. Reports from coarse paper merchants indicate a favorable feeling toward the association for the work it has done during 1933 in presenting a well organized front which has cooperated in an equally well managed local coarse paper market. Reports indicate that 1933 was, after all is said and done, a good year for these merchants. Warehouses were fairly full of paper, which felt the effect of rising commodity prices and thus brought a satisfactory return when coupled with an organized market situation. Accordingly, because of its usefulness—one item of proof among many—the association looks for increased support and cooperation from Chicago coarse paper merchants during 1934.

The Middle West Division of the Salesmen's Association of the Paper Industry staged a sort of surprise session on Tuesday noon, December 26, at the Brevoort Hotel. The salesmen even left the confines of the Hamilton Club to insure leaving even thoughts of business completely behind and spent the luncheon hour in all sorts of holiday festivity, including the singing of a large number of songs under the leadership of Jim Coy. Special entertainment was provided by two inimitable Irish singers—Joe Gubbins and Joe Cowhill. The SAPI will get back to normalcy on January 8 and will return to the Hamilton Club to resume the regular Monday meetings for the 1934 year.

News of the Trade

The current issue of the "Friendly Adventurer" issued by Bermingham & Prosser, Chicago paper merchants, reached customers just at the holiday season. Appropriately, the interesting twelve-page booklet contains a number of interesting bits concerning the holiday season as well as some fine comments by business leaders. Unobtrusively, the center pages carry an interesting story headed "The Oxford Viewpoint—a new idea in paper making". The copy includes a description of four well-known Oxford lines—Polar Superfine, White Seal Coated, Engravatone and North Star Dull Coated. The first, second and fourth grades seem to be unusually seasonal in name.

H. S. Adler, secretary, reports that improved conditions in the board world are evidenced by promised attendance at an important meeting of the National Paperboard Association, which is to be held at the Blackstone Hotel, Chicago, next Wednesday, January 3. The various groups within the association will hold special sessions on many matters, including the working out of code provisions under which the industry is operating.

Soundview Gets Restraining Order

[FROM OUR REGULAR CORRESPONDENT]

EVERETT, Wash., January 2, 1934—A temporary restraining order was waived in superior court here in the action of stockholders of the Soundview Pulp Company to prevent the $11,000,000 merger of that firm with the Rainier Pulp and Paper Company and Olympic Forest Products. The court set January 25 as the date of the trial of plaintiff's injunction plea. Approval of the merger was given by directors of the three concerns.

Philadelphia Paper Market in Better Position

Improvement Experienced During Past Year in Local Paper Industry Was Steady—While Purchasing is Generally Confined to Immediate Needs, Wrapping Paper and Bags Are in Good Demand—Merchant's Code Should Insure Firmer Basis

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., January 1, 1934—The general tone among those in the paper trade in Philadelphia is much more hopeful than it has been—certainly much better than last year and with an improvement that has been very steady. Of course it is necessary to be extremely cautious in trading, for, generally speaking, people are buying more conservatively, which is a healthy way of doing business—the buying is confined to immediate needs, with consumption of wrapping paper and paper bags in good demand.

Everybody is greatly concerned about the new processing tax and its probable effect, particularly on narrow rolls of gummed kraft in widths of less than two inches. It is feared that this new tax may work a hardship on manufacturers of gummed kraft, the supposition being that it will increase the sales of cotton twine; this tax is also reflected in certain kinds of paper bags. This new tax became effective as of December 1 but was not generally announced until a week or so ago.

During the week, word was received here that the President had signed the Paper Merchants' Code, and it is the concensus of opinion that hereafter a more firm basis will be established for business trading.

A letter from one of the mills was received among the trade here a day or two since, withdrawing prices on cheaper grades of bond, paper and book, stating that it will accept orders for the present at least at old prices; and, assuming that this mill is well posted, this means that every order will stand on its own merits, prices to be determined according to the discretion of the mill.

Appoints Paper & Cordage Committee Chairman

George K. Hooper, president of the Paper and Cordage Association, announces the appointment of the following chairman; Amos N. Coath, treasurer of F. W. Winne and Son, Inc., the largest twine distributor in the United States, chairman of the Finance Committee; Vincent Dirvin, of the Paper Manufacturing Company, of Philadelphia, chairman of Membership Committee; Leslie Bartlett, of Eastern Paper Manufacturing Company, chairman of Entertainment Committee, and E. L. Richards, of Buffalo Envelope Company, chairman of Publicity Committee. The directors of this association will hold a meeting on Wednesday next at 2 o'clock at the office of the Paper Manufacturers of Philadelphia, to formulate plans for stimulating its membership, hoping to attain a goal of seventy-five members.

News of the Trade

Simon Walters, president of Simon Walters, Inc., was host at the annual dinner on Wednesday, given to all those connected with his three houses—Philadelphia, Allentown and York. There was a representative attendance of the managers and executives of all three houses which include Lehigh Valley Paper House Division, Andrews Paper House Division and Philadelphia. They all gathered around the banquet table at Shoyers, located at Fourth and Arch streets, and all attested to the good comraderie existing, by singing and recitations. Mr. Walters addressed the gathering, expressing his satisfaction with the splendid co-operation and many promotional plans adopted during the year by his branch houses, stressing the fact that in view of a large inventory purchased at lower prices, he is very hopeful that with the orders now in hand for next year, business will far exceed his expectations. Above everything, Mr. Walters said he was thankful that all his employees and their families have enjoyed good health this past year.

As is the usual custom at this Christmas time, the Thomas W. Price Company held its Christmas party at their offices, one hundred and seventy-five people being in attendance, including employees and invited guests. The feature of the event was a very well planned show, the *dramatis personae* being all employees of the Price company under the direction of John Schmidt, also an employee. After the show and singing of Christmas carols they were treated to a dinner during which Mr. Fort presented each employee with a turkey.

Some of the board mills in this vicinity have shut down this past week, and quotations are merely nominal waiting to see how the market will act after the first of the New Year. The snow storm restricted the collection of material but it will not effect present conditions, except for the fact there will be less stock coming in.

The Paper and Bag Division of the Paper Trade Association will hold a meeting during this week to formulate plans for the coming year.

Several thousand tons of scrap paper on the loading platform of the Container Corporation of America were swept by fire this past week, spreading dense smoke through a large part of Manayunk. Two alarms were sounded. The flames were confined to the concrete platform which skirts several fireproof buildings of the plant, occupying a full block on Nixon street above Fountain.

Work of the Import Committee

The United States Court of Customs and Patent Appeals has upheld the decision of the United States Customs Court on an importation of paper at Galveston. The Customs officials, after submitting the paper through the Import Committee held it to be dutiable as writing paper at 3 cents per pound and 15 per cent, while the importer claimed it to be book paper at ¼ cent per pound and 10 per cent. The lower court upheld the Galveston officials, and the higher court has sustained that decision.

New cases have been initiated involving fifty shipments of foreign paper, including undervaluation of kraft wrapping, fancy writing, and various special papers. Nearly twenty of the cases originated at Los Angeles, where Japanese filter paper, canary and colored news, and other papers have been held for duty at rates higher than those claimed by the importers.

Thirty-five cases which had been carried to the United States Customs Court on appeal by importers from rulings of the customs officials, which held these shipments to be dutiable at rates or values higher than claimed by the importers were abandoned by the importers in court when they came up for trial.

Paper and Pulp Industry Improves in Canada

Better Demand for Paper During Past Year Enables Manufacturers to Hold Own—Improved Request and Higher Prices for Various Grades of Pulp Experienced—Outlook for News Print Paper During Forthcoming Year Brighter Than for Some Time Past

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., January 1, 1934—Definite improvement was recorded in 1933 in certain divisions of the pulp and paper industry in Canada. While the general situation is not all that might be hoped for, yet the improvement, though small, has been encouraging. Improved demand and better prices for the various grades of pulp and a somewhat better demand for paper products have enabled the manufacturers to hold their own. Production in 1933 is estimated at little more than that reported for 1932, when $135,634,983 worth of pulpwood and pulp and paper products were turned out. This is a lower figure than reported for several years past, due to the smaller values for pulp and paper products. Production held up fairly well in 1933 and, in the case of groundwood pulp and sulphite pulp, better prices prevailed. Developments, also, in the closing months of 1933 promise well for the Canadian news print manufacturers during 1934. Figures on production and consumption would indicate that a halt has been called to the decline around the middle of 1933. The demand situation is definitely more encouraging than it was at the beginning of 1933.

Operations in 1933 were reduced in both the stiff box and folding box groups, the stiff box trade suffering most. Prices were also lower during 1933, although raw materials advanced toward the end of the year. Value of production in 1933 will, therefore, be somewhat lower than in the previous year. Increasing use of paper packages has helped maintain production of the industry during the past three years, the decline in the value of production being chiefly attributable to lower prices. Thus value of production in 1932 is only 25 per cent below the high level of 1929 as compared with a drop of around 50 per cent in the totals for all manufacturing industries. Definite improvement in almost all lines of printing became evident in the latter half of 1933, advertising revenue showed an up-turn, job printing houses became more active and employment in the industry showed a steady upward tendency. The total revenue for the year, however, will be shortly below that of the preceding year. Heavier advertising appropriations already announced for 1934 make the outlook for that year much better.

Don Valley's Annual Meeting

The annual meeting of the shareholders of the Don Valley Paper Mills Company, Ltd., was held at the company's head office on University Avenue, Toronto, a few days ago, when a successful year's operations were reported. It was pointed out that considerable improvement had been made to the plant during the year, the benefits of which were already beginning to show in greater efficiency and economy in manufacture. The directors, Norman E. Wainwright, R. H. Joyce and John F. McKenzie, were re-elected. At the directors' meeting following the annual session, Mr. Wainwright was re-appointed president and Mr. Joyce was re-appointed vice-president.

E. W. Backus Files Counter-Claims

With a suit for $7,000,000 against him, Mr. Backus has started a battle to regain control of his industrial organizations. These comprise pulp and paper plants in Canada, together with lumber and power plants. He asserts that the claim against him is but a part of a conspiracy between the $70,000 a year receiver and a group of eastern bankers to destroy him and turn his properties over to a competitor. Mr. Backus claims that up until 1931, when the receivership got under way, he never had any difficulties getting necessary finances for his maturing obligations. The bills were all paid on time and obligations were all promptly met. Then in 1931 he discussed the financing of all maturing notes of Minnesota and Ontario Company with the fiscal agents. A bond issue was underwritten and funds arranged for. But then, within a few days, he was informed, despite that fact that Minnesota and Ontario Company had cash on hand totalling $1,100,000 that a receivership would have to be instituted and that all available cash was appropriated for the banks. The result of the receivership administration, he contends, has incurred heavy losses running into millions of dollars without notice or knowledge of the creditors primarily interested therein, and that the estate has been mulcted in excessive costs and expenses far exceeding anything incurred by Minnesota and Ontario during the period of its successful operation. Continuance of the receivership, he says, will result in great and irreparable loss to the shareholders. The prospect of a fight over the properties he has built up over half a century give him no restive moments, Mr. Backus states.

Pulp Camp Dispute Settled

Differences which have existed between the Spruce Falls Pulp and Paper Company, of Kapuskasing, Ont., and their employees, appear to have been satisfactorily adjusted, according to a statement issued by the Hon. W. A. Gordon, Federal Minister of Labor. Mr. Gordon said that adjustment had been achieved through the co-operative efforts of Federal Labor Department and Provincial authorities. The differences precipitated a strike which began on November 1, and which involved a couple of thousand pulpwood cutters engaged in camps in Northern Ontario from Cochrane to Fort William.

Notes and Jottings of the Trade

The coal handling plant installed last summer at the plant of the Great Lakes Paper Company, Fort Francis, Ont., is now in operation and the company is receiving coal from lake steamers over their own dock.

Canada imports more waste paper than any country in the world, despite the fact that she is herself a leading world producer of pulp and paper products, stated William T. Malkin, retiring president of the Fort Erie Chamber of Commerce, commenting on the expansion of water operations at Fort Erie. Large cargoes of waste paper, he said, are being landed at Fort Erie dock via New York State Canal for transmission to interior points.

The Board of Trade at Calgary announced that an unnamed New York company planned to establish a chain of corrugated box factories in Canada. Enquiries have been made for a site in Calgary, although the main factory was planned for eastern Canada. No further details have been forthcoming.

Foreign Competition vs The Newsprint Code

Millwood, Wash., Dec. 19, 1933.

Editor PAPER TRADE JOURNAL:

General Hugh S. Johnson, in transmitting the Newsprint Code to the President, wrote:

"The newsprint industry is in a very serious condition. Consumption has fallen from 3,800,000 tons in 1929 to 2,800,000 tons in 1932. The capacity of the mills in the United States is about 1,800,000 tons. In 1929 they produced 1,400,000 tons and in 1932 1,008,000 tons. The price has fallen from $65 per ton delivered in 1929 to $40 in 1933.

"It is doubtful whether even the most efficient mills can produce paper at this price in either Canada or the United States. In fact, five out of eight of the largest producers in the United States are in receivership, as well as practically all of the Canadian mills, which are not supported by their affiliates.

"As newsprint is imported duty free, the United States and Canada branches of the industry are particularly one from a competitive standpoint, and consequently the manufacturers in the United States can obtain no reimbursement through increased prices for any additional costs which may be imposed upon them by this Code.

"The condition of the newsprint industry has a depressing and disturbing effect on the general paper industry, both because newsprint mills can and do shift over to other types of paper, and because the price of newsprint has a pronounced influence on the price of other paper.

"Newsprint contracts are generally made for the calendar year and offerings for 1934 are now being made. Some offers as low as $30 to $35 per ton, delivered, have been made by Canadian mills. The Paper Industry as a whole is in something of a panic for fear that a lower price for newsprint will be established and that this will result in the inability of the Industry to meet its increased costs under the National Industrial Recovery Act."

Some twenty years ago our Government gave away the newsprint industry to Canada by eliminating the tariff on newsprint paper, the only one of all the different kinds of paper to be stripped of such protection. So now newsprint is subject to the unrestricted competition of Swedish, Norwegian and Finnish as well as Canadian mills. Soon Russia may be added to the list.

Paragraph 3 (e) of the Recovery Act gives the President power to place such limitations and fees upon imports as may be necessary to make the Act workable. Unrestricted foreign competition will cause any code to fail because of the impossibility of paying American wages, taxes and raw material prices and then selling the resultant product at foreign prices which are based on much lower values.

The Newsprint Code was approved and signed by the President November 17, becoming effective November 27. It is designed to stop unfair competition, to end price cutting and to prevent selling below United States costs.

Prior to the signing of the code General Johnson called a conference in Washington between the United States mills and the mills of Canada and Europe in order to work out an agreement in harmony with the newsprint code without making it necessary to resort to the import control power of the President under paragraph 3 (e) above cited.

Since then various conferences have been held with the result that the Canadian mills have organized a "Baby NRA" and they have drawn a "supplementary code" which it is proposed now to have adopted by a composite association of the Canadian and the United States mills.

The primary statement of the proposed supplementary code is that contracts made prior to October 24 shall be held valid. These contracts in many cases cover periods of three to five years and in other cases are of indeterminate duration, the price being adjustable to conditions. This means that these below-cost prices coupled with all of the tonnage secured by Canadian mills as a result, are to hurdle the Recovery Act and the United States newsprint code, thereby retaining the present volume now enjoyed by the Canadian mills in the United States market. Several Canadian mills are running at capacity while United States mills are running from 60 per cent to 80 per cent capacity. The question of volume is just as important as the question of price (in many cases more so) because the operation of a mill at capacity means a very material decrease in the cost of production.

The proposed supplementary code if adopted will either force United States newsprint mills into bankruptcy or to manufacture other grades to the detriment of the present manufacturers of these other grades. In either event the result would be to leave the foreign mills in entire control of the market in addition to their control of prices which has been the condition for seven years past. At the same time the operation of the newsprint code for the United States mills commencing November 27, the date it went into effect, will materially raise their costs in addition to the increases already felt from operation of other codes such as lumber which is raising the price of pulp wood.

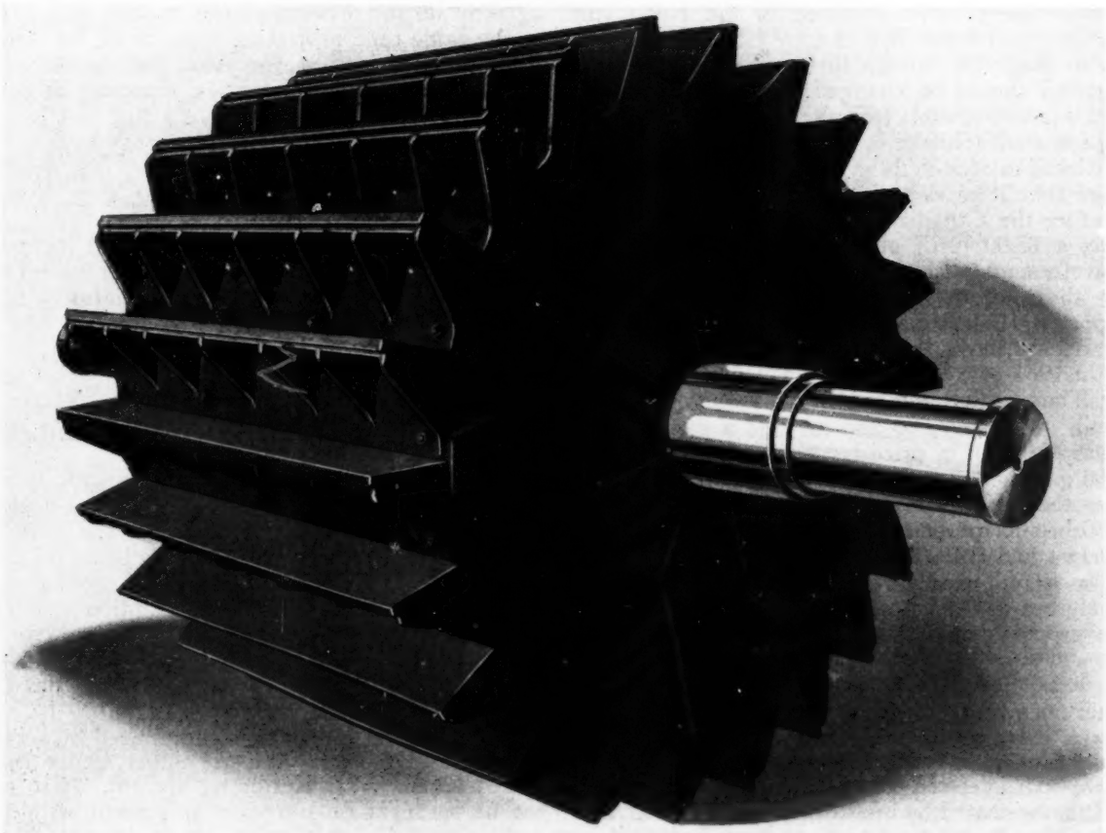
The newspaper publishers as a whole have not demanded price concessions from the newsprint mills. Many newspaper publishers and distributors of standard newsprint have continued to buy the regular standard grade of newsprint, in many cases at a higher price than quoted by foreign mills, basing their action on a high degree of loyalty to the United States manufacturer and under the feeling that money circulated at home is the quickest way out of this depression; that this money pays United States labor and taxes, hastens the exchange of domestic goods of all kinds and thus makes revenue for the Government.

The price pressure has been applied by a few large publishers of chains of daily papers. Their contracts have been used as a bait to Canadian mills and the resulting prices then are broadcast in the market, thereby making the price which all other mills have to meet. One contract was let in California to a Swedish mill at a price $8.00 a ton below *whatever* the American price might be. And this price was broadcast also. We cannot blame foreign mills for getting business in any way they can. The blame is on us for permitting it and on our publishers who buy while at the same time they are accepting NRA advertising and flying the Blue Eagle over their editions printed on foreign paper.

The "panic" in the United States newsprint industry, mentioned by General Johnson, is largely caused by the experience of the industry with the enforcement of the anti-dumping laws by our Federal Government in years past. Some seven years ago, to capture our market one Canadian mill cut the price $10 to $15 a ton below the then current figure. All attempts to stop this under the anti-dumping laws proved unavailing, one main reason given by our Government being that complainants were not able to show injury because of the fact they were running to capacity.

This amounted to an invitation to foreign mills to increase their production to the demoralization of the United States industry so long as the United States mills could find other business to replace the stolen tonnage though

January Announcement



WE ANNOUNCE this new DILTS KEYED BANDLESS BREAKER BEATER ROLL with *BRACED* BARS (patented).

Let us build a roll of this type for your breaker beater or rebuild your present roll.

We build all types of continuous and batch breaker beaters of sturdy iron and steel construction correctly designed for low power consumption and high capacity.

OUR CUSTOMERS ARE PROTECTED UNDER DILTS AND SHARTLE PATENTS.

— Dilts —

MACHINE WORKS Inc. FULTON, N.Y.

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at a losing price. It also signified that the Government was willing to give up its potential income, further growth of the industry at home and jobs for 50,000 to 60,000 heads of families. The first vigorous measure against dumping was taken by the Government last week when it demanded bonds for the values of all newsprint imports pending investigations of these shipments.

The administration provides for R. F. C. loans to industry. Under the present situation in the Newsprint Industry no band will lend. Nor can the Government consistently do so until this foreign threat is ended.

That situation should be changed promptly by use of the President's power to limit foreign imports to the extent of diverting sufficient tonnage in the United States market to operate United States mills at full capacity. In addition the price should be raised at least to $45.00 per ton as it was before the Canadians made the cut last spring. Furthermore, a $5.00 tariff on foreign newsprint would give the Government much needed revenue.

As to the ability of the consumer to pay the increased price, a report of industrial corporation profits for the year 1931 and 1932 shows that paper and products showed a net profit in 1931 of $1,600,000 and a deficit in 1932 of $8,661,000. The printing and publishing industry in 1931 showed a gain of $20,097,000 and in 1932 a gain of $9,325,000. The $5.00 cut in price last spring means at least a $10,000,000 gain per year to the printing and publishing industry over the gain it had in 1932 and likewise at least a $10,000,000 loss to the paper industry in addition to the large loss shown in 1932. The figures for 1932 cannot be taken literally as applying directly to the newsprint industry entirely but at least they are indicative.

As a result of the fright of the Pinchot National Conservation era, many of our people are still under the impression we do not have sufficient forest resources to care for the requirements of our paper markets. This is not so. In Alaska there are 23,000,000 acres carrying large stands of pulpwood. In the Tongass forest alone there is 78,500,000,000 board feet of commercial timber on 3,000,000 acres. It is estimated by one forestry expert that 20,000,000 acres of well managed high grade forest land in Oregon, Washington and northern California would produce from 20,000,000 to 40,000,000 cords of wood per year perpetually; whereas total consumption in the United States for all purposes in peak years was less than 14,000,000 cords. In addition, recent developments in the use of Southern pine by the Georgia State Department of Forestry opens up an entirely new source of pulpwood supply.

Everything used in the manufacture of newsprint can be bought in the United States. All this indicates that we need a strictly American policy and one not to be confused and sidetracked by any attempt to take care of the industry in other lands. No foreign country would divide its market as proposed by the supplementary code. Can one imagine France or Italy inviting any such cooperative control of their national wheat market or Roumania for oil, England as to manufactured articles or Canada on any imports whatsoever.

Canada's policy is a good illustration. They put increasing duties on all imports of paper with the result that practically no newsprint has been exported to Canada for several years. Canadians recently started to enforce a law passed in 1928 providing an income tax on imports. More recently they have imposed a dumping duty on United States goods, inspired by the fall of the value of our dollar which has carried it to a slight discount below theirs. Their customs laws give their public officials the power to take immediate action when there is any threat of injury to their industries. Canada does not wait until the damage is done.

Furthermore, at the Ottawa conference the Empire declared a new doctrine of nationalism. England now has protection against 90 per cent of its imports while the United States protects against less than 50 per cent.

If our Recovery Act is guided by purely an American policy we do not have to accept any foreign supplements to our newsprint code nor work out any long winded agreements for division of our market with foreign mills, at the same time protecting them in all the iniquities they have worked upon us for years past in the way of price cutting, depreciated currencies, dumping of products and the theft of our business. We would not have to worry about their welfare any more than they have worried about ours. The Recovery Act itself and our newsprint code would be all necessary, providing they were enforced strictly from the American viewpoint.

If the Government is to regulate and increase the cost burdens of the newsprint industry as a matter of national welfare, it likewise must protect the industry for the same reason. It cannot consistently assume the one and evade the other by putting on the industry the unfair burden of negotiating a division of our national market with foreign mills and foreign labor and the large newspaper publishers acting as arbiter. Our NRA policy cannot straddle this issue and be anything but a mockery.

On the one hand it has initiated a code to correct obvious marketing evils and in this code has made provision for enforcing necessary conduct on the part of foreign manufacturers to permit of the code being maintained. On the other hand it has counseled us to negotiate with foreign mills ourselves, causing the assumption that either it is not able to control the importation of newsprint or that for some reason or other it is forced to discriminate against the newsprint industry of the United States in spite of the plain language of the law.

This situation cannot be compromised by accepting both of these viewpoints. We are either under the National Industrial Recovery Act or we are not. If it is necessary for us to negotiate our own agreement with foreign industries then most certainly we are not.

Quite to the contrary, however, General Johnson's letter to the President transmitting the newsprint code, by reciting the difficulties of the industry, the effect of foreign competition and by its clear understanding of market conditions seems to indicate definitely that the code is effective and workable and that upon proper presentation of our injuries from foreign competition the President will take requisite action to correct the trouble.

If our balance of trade between industries as well as between industry and agriculture is not harmonized the whole system will fall down. In this country we can make this balance without any reference to other countries because the sum total of all of our products makes for self-sufficiency. But it is national idiocy for us to contemplate a system which, to the detriment of home industry, proposes a division of our home markets with other countries. It is idiotic under this carefully calculated Recovery Act for us to blindly permit unjust and unequal division of the profits of trade as between the different groups in our own country. The favored group may be the gainer for a short period but eventually some one will have to pay for the idle time set up by an unbalanced system. Some one will have to pay taxes, local and federal and some one will have to keep up employment. The Federal and Local Governments cannot dole out from the public pocketbook indefinitely. Our National Wealth comes from the product and prosperity of our own labor, not that of other countries.

WALDO ROSEBUSH.

CODE FOR PAPER DISTRIBUTING TRADE IS SIGNED

(Continued from page 13)

General Code, the provisions of such General Code shall prevail, (except as to the maximum hours and minimum wages herein prescribed which are more favorable to the employee) and this code shall be deemed to have been modified accordingly.

Article IV. Administration.

1. The creation of a Code Authority to cooperate with the Administrator in administering the provisions of this Code is hereby authorized.

2. The Code Authority shall be composed of seven members selected by the Board of Directors of the Association with a view to geographical representation, two additional members selected by the members of the trade who are not members of the Association but who assent to this code and who agree to comply with the requirement thereof and to sustain their reasonable share of the proper expenses of its administration in an equitable way with the approval of the Administrator (or such two members may be selected by the Administrator), and not more than three members designated by the Administrator who shall act in an advisory capacity without vote.

3. (a) The Association shall (1) impose no inequitable restrictions on membership, and (2) submit to the Administrator true copies of its articles of Association, by-laws, regulations, and amendments thereof when made, together with such information as to membership, organization, and activities, which the Administrator may deem necessary to effectuate the purposes of the Act.

(b) In order that the Code Authority shall at all times be truly representative of the trade and in other respects comply with the provisions of the Act, the Administrator may provide such hearings as he may deem proper; and thereafter if he shall find that the Code Authority is not truly representative or does not in any other respect comply with the provisions of the Act, may require an appropriate modification in the method of selection of such Code Authority.

4. Members of the trade shall be entitled to participate in and share the benefits of the activities of the Code Authority by assenting to and complying with the requirements of this Code and sustaining their reasonable share of the proper expenses of its administration. Such reasonable share of the proper expenses of its administration shall be determined by the Code Authority, subject to review by the Administrator, and shall be collected by the Code Authority from the members of the Trade.

5. Powers of the Code Authority—The Code Authority (1) shall require from members of the Trade such reports as are necessary to effectuate the purposes of this Code, and (2) may upon its own motion or upon complaint of any member of the Trade make investigation as to the functioning and observance of any provisions of this Code, and (3) may hear and attempt to adjust such complaints, and report any violation of the Code to the Administrator and (4) may from time to time appoint such committees as it shall deem necessary or proper with a view to geographical requirements, make rules and regulations for the organization and functioning of such committees which shall be known as Regional Committees, and delegate to any such committee or committees generally or in particular instances such of its powers under the Code as it shall deem necessary or proper, subject to the approval of any actions of the said Regional Committee or committees by the Code Authority, and (5) shall generally administer this Code under the sanction and with the approval of the Administrator.

6. All acts of the Code Authority shall be subject to review by the Administrator and to suspension, modification or cancellation by him in any case in which he shall determine such act violates the purposes of the National Industrial Recovery Act.

7. The Administrator may from time to time after consultation with the Code Authority issue such administrative interpretations of the various provisions of this Code as are necessary to effectuate their purpose.

Article V. Hours.

1. Employees engaged in the Trade shall not be required or permitted to work hours in excess of the limits prescribed in the following schedule:

Schedule of working hours

(a) Watchmen:

56 hours per week but not more than six days in any one week.

(b) Outside delivery men:

9½ hours in any one day and 48 hours in any one week; provided, however, that time worked in excess of 9½ hours in any one day and 48 hours in any one week shall be overtime and shall be paid for as not less than time and one-third, and no such employee shall work over 4 hours overtime in any one week.

(c) Executives and their personal secretaries and other employees regularly engaged in a supervisory capacity receiving $35 or more per week, and outside salesmen: no limitation.

(d) All other employees:

8 hours in any one day and 40 hours in any one week; provided, however, that time worked in excess of 8 hours in any one day and 40 hours in any one week shall be overtime and shall be paid for as not less than time and one-third, and no such employee shall work over 8 hours overtime in any one week.

Provided, however, that no limitation on hours of work contained in said schedule shall apply to employees of any class when engaged in emergency repairs or emergency maintenance work involving break-downs or protection of life and property, in which case time and one-third shall be paid for hours worked in excess of the said schedule.

Article VI. Wages.

1. The minimum rates of pay shall be as follows:

(a) In cities of over five hundred thousand population or in the immediate trade area thereof at the rate of $15 per week.

(b) In cities of between two hundred fifty thousand and five hundred thousand population or in the immediate trade area thereof at the rate of $14.50 per week.

(c) In cities, towns or places under two hundred fifty thousand population or in the immediate trade area thereof at the rate of $14 per week.

(d) The aforementioned minimum rates of pay shall be the minimum rates of pay for a 40 hour week, except for the employees specified under subdivision (b) of Section 1 of Article V hereof, and for such employees said minimum rates of pay shall be the minimum rates of pay for a 48 hour week.

(e) In the case of employees on an hourly, part time, or piece-work basis, at a rate which will not yield less for

a full week than the minimum rate of weekly pay above prescribed.

(f) In the case of employees continuously engaged in a mechanical or factory operation at the rate of $.37½ per hour for male employees, and $.34 per hour for female employees.

2. Office boys and girls between the ages of sixteen (16) and eighteen (18) years inclusive may be paid at the rate of not less than 80 per cent of the minimums above mentioned otherwise applicable to them. The number of employees classified as office boys and girls shall not exceed 3 per cent of the total number of employees of any employer provided that every employer having at least ten (10) employees shall be entitled in any event to one office boy or girl hereunder.

3. A person whose earning capacity is limited because of age or physical or mental handicap may be employed at light work at a wage of not less than 80 per cent of the minimum prescribed by this Code provided the State Authority designated by the United States Department of Labor shall have issued a certificate authorizing his employment on such basis. Each member shall file with the Code Authority a list of all such persons employed by him. The provision of this section requiring a certificate of authority shall not become effective until sixty (60) days after the effective date of this Code.

4. Female employees performing substantially the same work as male employees shall receive the same rate of pay as male employees. The Code Authority shall within ninety (90) days after the effective date of this Code file with the Administrator a description of all occupations in the Industry in which both men and women are employed.

5. The wage rates of all employees receiving more than the minimum rates herein prescribed shall be reviewed and such adjustments, if any, made therein as are equitable in the light of all the circumstances, and within (60) days after the effective date hereof, the Code Authority shall report to the Administrator the action taken by all members of the Trade under this Section.

6. Every employer shall make reasonable provisions for the safety and health of his employees at the place and during the hours of their employment. Standards for safety and health shall be submitted by the Code Authority to the Administrator within (6) months after the effective date of this Code.

Article VII. General Labor Provisions.

1. No person under 16 years of age shall be employed by any member of the Trade (provided, however, that where permitted by law persons between 14 and 16 years of age may be employed not in manufacturing or mechanical departments not to exceed three hours per day and those hours between 7 A.M. and 7 P.M. in such work as will not interfere with hours of day school), nor any one under 18 years of age at operations or occupations hazardous in nature. The Code Authority shall submit to the Administrator within sixty days from the effective date hereof a list of such occupations. In any State an employer shall be deemed to have complied with this provision if he shall have on file a certificate or permit duly issued by the Authority in such State empowered to issue employment or age certificates or permits showing that the employee is of the required age.

2. (a) Employees shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint, or coercion of employers of labor, or their agents, in the designation of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection.

(b) No employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing, or assisting a labor organization of his own choosing, and

(c) Employers shall comply with the maximum hours of labor, minimum rates of pay, and other conditions of employment, approved or prescribed by the President.

3. Within each State this Code shall not supercede any laws of such State imposing more stringent requirements on employers regulating the age of employees, wages, hours of work, or health, fire, or general working conditions than under this Code.

4. Employers shall not reclassify employees or duties of occupations performed by employees so as to defeat the purpose of the Act.

5. Each employer shall keep posted in conspicuous places accessible to employees the labor provisions of this Code.

Article VIII. Accounting, Selling.

1. The Code Authority shall, as soon as practicable formulate a standard method of accounting and costing for the Trade and submit the same to the Administrator. When it shall have been approved by the Administrator, every member of the Trade shall use an accounting and costing system which conforms to the principles of, and is at least as detailed and complete as such standard method.

2. (a) In any geographical region in which the Code Authority in its discretion believes the condition of competition in any article or articles of merchandise to require it, the Code Authority may by order put into effect a price reporting plan. Such plan shall be administered through a Regional Committee appointed as provided in Section 5 of Article IV hereof. Notice of such order shall be sent to every known member of the Trade selling the article or articles specified in said order in the said geographical region. Every member of the Trade selling such articles in such geographical region may at its option within the time specified by the Code Authority in said order file with the Regional Committee a list showing the current prices and terms and conditions of sale (including all differentials, discounts, trade allowances and special charges), of such articles offered for sale by such member in such region. Such member of the trade may from time to time file revisions of its price list; a revision, however, shall not be effective until five days after the same shall have been filed, unless a shorter period be permitted by the Regional Committee. When any member of the Trade shall file any such schedule or any revision thereof, any other member of the Trade selling in the said geographical region may also file a revision of his own schedule to become effective as of the same time as such first mentioned schedule. The Regional Committee shall send to each member of the Trade selling such articles in such geographical region requesting the same, a copy of all such schedules and of all changes and revisions thereof. Such information shall also be available to any other persons concerned requesting the same. No member of the Trade filing a list of prices and terms shall sell such articles within such geographical region at prices lower or terms more favorable than those set forth in its price list aforesaid or in the revision thereof.

After 25 per cent in number and dollar volume of the known members of the Trade selling the articles specified by the Code Authority as aforesaid in such geographical region shall have filed their lists of prices and terms as aforesaid, notice to that effect shall be given by the Regional Committee to all known members of the Trade sell-

ing such articles in said geographical region. Thereafter no member of the Trade shall sell within the said geographical region any article or articles so specified by the Code Authority directly or indirectly by any means whatsoever at a price lower, or discounts greater, or on terms and conditions more favorable to the purchaser, than the lowest filed price, the highest filed discounts, or terms and conditions most favorable to the purchaser, then filed, but nothing herein contained shall prevent such member of the Trade from at any time filing a list of his own prices, terms and conditions of sale.

(b) Each schedule filed under this section shall state whether the prices, terms and conditions specified are justified under subdivision (a) or under subdivision (b) (1) of Section 4 hereof, and in the case of justification under subdivision (b) (1) shall identify the schedule or schedules of the other member or members of the Trade justifying such prices, terms and conditions. A schedule justified upon the basis of the schedule or schedules of another member or members shall become void forthwith upon the cancellation or revision upwards of such justifying schedule or schedules. If Section 4 of this Article be suspended the provisions of this subdivision shall be suspended for the same period.

3. The Code Authority shall have power on its own initiative, or in the complaint of any member, to investigate any price for any product shown in any schedule filed hereunder, and for such purpose to require the member who filed such schedule to furnish such information concerning the cost of such product as the Code Authority, after such investigation shall determine that such price violates any of the provisions of this Article, the Code Authority shall so notify such member, and thereupon such price shall become void and of no effect. All such decisions by the Code Authority shall be filed with and be subject to review by the Administrator.

4. Except in performance of bona fide contracts in existence on the effective date of this Code no member of the Trade shall sell or permit the sale of any merchandise at less than the lower of the following:

(a) In order to prevent unfair competition in the Trade and to avoid the demoralization of the market for paper and paper products, the practice of selling any merchandise below the replacement cost thereof to the seller is hereby declared to be an unfair trade practice. This practice results in speculative buying for a rise in the market and encourages periodical overproduction by manufacturers. Such overproduction in turn eventually makes for shutdowns in the paper manufacturing industry. It works back against the labor employed in manufacturing and distributing, and against the consumer.

This declaration against sales below replacement cost by a member of the Trade does not prohibit him from selling any merchandise without adding to such replacement cost any profit to himself. But the selling price of merchandise should include an allowance for actual wages of labor, to be fixed and published from time to time by the Administrator.

(b) (1) The lowest price then scheduled for such merchandise under the provisions of this Article VIII by any other member of the Trade when sold in a geographical region where a price reporting plan is in effect.

2. Or, the lowest price for which such merchandise is being then bona fide offered under the provisions of this Article VIII by any other member of the Trade in a geographical region where a price reporting plan is not in effect; provided that a complete description of any offer or sale pursuant thereto shall immediately be made to the Code Authority in such form and detail as it may prescribe.

Bona fide quotations made hereunder may be maintained by the seller for five days after the making thereof.

The provisions of this Section shall remain in effect until July 1, 1934, at which time it shall terminate and come to an end without further order unless renewed or extended by the Administrator.

5. The restrictions specified in Section 2 and 4 hereof shall not apply: (a) To any sale made in closing out in good faith any stock, in whole or in part, for the purpose of discontinuing its sale, provided a statement is made to that effect on the invoice and provided such close out stock is first listed with the Code Authority, and no close out stock shall be offered without the approval of such Authority.

(b) To sales of goods that are damaged or deteriorated in quality, provided that such goods are properly described by a statement to that effect on the invoice, and provided they shall be listed with the Code Authority, and no damaged merchandise shall be offered without the approval of such Authority.

(c) To transactions with other members of the Trade provided that the same shall be listed with the Code Authority and no such transactions shall be conducted without the approval of such Authority.

(d) To merchandise classified by the manufacturers thereof prior to its sale by them to the Trade as job lots or seconds, provided such merchandise is properly described by a statement to that effect on the invoice when sold by a member of the Trade.

(e) To sales of distress merchandise sold to liquidate a defunct business, providing that such sales shall be made in such manner and on such terms and conditions as the Code Authority may approve.

Powers prescribed for the Code Authority in subsections (a), (b), (c), and (e) hereof may be delegated by the Code Authority to the Regional Committees to be appointed under Section 5 of Article IV of this Code.

6. The Code Authority may suspend for any period of time and from time to time, all of Section 4 of this Article but not part thereof, as to any article or articles sold by the Trade in any geographical region.

Article IX. Reports, Statistics.

1. Each member of the Trade shall prepare and file with the Executive Secretary of the Code Authority at such time and in such manner as it may prescribe such reports and statistical information as it, subject to the approval of the Administrator, or the Administrator may require from time to time to reflect conditions in the Trade. Any or all information so furnished by any members shall be subject to checking for the purpose of verification by an examination of the books and accounts and records of such member by any disinterested accountant or accountants or qualified person or persons designated by the Code Authority.

2. Except as otherwise provided in the Act, or in this Code, all statistics, data and information filed or required in accordance with the provisions of this Code shall be confidential and the statistics, data and information shall be published except in combination with other similar data and in such a manner as to avoid the disclosure of confidential information. The Code Authority shall arrange in such manner as it may determine for the publication currently to members of reports and statistics hereunder.

3. The Code Authority shall make such reports to the Administrator as he may from time to time require.

4. In addition to information required to be submitted to the Code Authority there shall be furnished to Government Agencies such statistical information as the Admin-

istrator may deem necessary for the purposes recited in Section 3 (a) of the Act.

Article X. Trade Practices.

1. No member of the Trade shall publish advertising (whether printed, radio, display or of any other nature), which is misleading or inaccurate in any material particular, nor shall any member in any way misrepresent any goods (including, but without limitation, its use, brand, trade-mark, grade, quality, quantity, origin, size, substance, character, weight, strength, thickness, nature, finish, material, content or preparation) or credit terms, values, policies, services, or the nature or form of the business conducted.

2. No member of the Trade shall knowingly withhold from or insert in any quotation or invoice any statement that makes it inaccurate in any material particular.

3. No member of the Trade shall brand or mark or pack any goods in any manner which is intended to or does deceive or mislead purchasers with respect to the brand, grade, quality, strength, thickness, origin, size, substance, character, nature, finish, material, content or preparation of such goods.

4. No member of the Trade shall publish advertising which refers inaccurately in any material particular to any competitors or their goods, prices, values, credit terms, policies or services.

5. No member of the Trade shall publish or circulate unjustified or unwarranted threats of legal proceedings which tend to or have the effect of harassing competitors or intimidating their customers. Failure to prosecute in due course shall be evidence that any such threat is unwarranted or unjustified.

6. No member of the Trade shall secretly offer or make any payment or allowance of a rebate, refund, commission, credit, unearned discount or excess allowances, whether in the form of money or otherwise, nor shall a member of the Trade sell below published prices or terms or secretly offer or extend to any customer any special service or privilege not extended to all customers of the same class, for the purpose of influencing a sale.

7. No member of the Trade shall give, permit to be given, or directly offer to give, anything of value for the purpose of influencing or rewarding the actions of any employee, agent or representative of another in relation to the business of the employer of such employee, or the principal of such agent or the represented party, without the knowledge of such employer, principal or party. Nothing herein contained shall prohibit the free distribution of articles commonly distributed for advertising.

8. No member of the Trade shall attempt to induce the breach of an existing contract between a competitor and his customer or source of supply; nor shall any such member interfere with or obstruct the performance of such contractual duties or services.

9. No member of the Trade shall guarantee to sell below the price of a competitor.

10. No member of the Trade shall interfere with a competitor's business through enticing of employees from the employment of such competitor, provided, however, that nothing in this paragraph shall prevent an employee of one employer from offering his services to a competitor, nor prevent any employer from employing the employee of another employer.

11. No member of the Trade shall deliberately misrepresent "firsts" as "seconds" or "seconds" as "firsts."

12. No member of the Trade shall execute instruments for the sale of merchandise purporting to be contracts in which only one of the parties is understood to be bound to perform.

13. No member of the Trade shall neglect to observe in letter and in spirit obligations assumed or contracts entered into as buyer or seller.

14. No member of the Trade shall sell goods on consignment or place goods in the possession of the buyer to be paid for when sold, unless authorized by the Code Authority due to special circumstances.

15. No member of the Trade shall misrepresent to any manufacturer or his agent either as to price, terms or other considerations the offerings of a competitive manufacturer.

Article XI. Recommendations.

1. The Code Authority may, from time to time, present to the Administrator recommendations based on conditions in the Trade which will tend to effectuate the operation of this Code and the policy of the Act, and in particular along the following lines:

(a) For the establishment of rules of fair trade practice and simplified practice recommendations for the Trade and for the codification of its trade customs, and the enforcement thereof.

(b) For the establishment of rules relating to selling and accounting in addition to or in substitution for the rules prescribed by Sections 2, 3, 4 and 5 of Article VIII hereof, or any of them.

Such recommendations when approved by the Administrator shall have the same force and effect as the provisions of this Code.

Article XII. Modification.

1. This Code and all the provisions thereof, are expressly made subject to the right of the President, in accordance with the provisions of sub-section (b) of Section 10 of the Act, from time to time to cancel or modify any order, approval, license, rule or regulation issued under Title I of said Act and specifically, but without limitation, to the right of the President to cancel, or modify his approval of this Code or any conditions imposed by him upon his approval thereof.

2. This Code, except as to provisions required by the Act, may be modified on the basis of experience or changes in circumstances, such modification to be based upon application to the Administrator, and such notice and hearing as he shall specify, and to become effective on approval of the President.

Article XIII. Monopolies.

1. No provision of this Code shall be so applied as to permit monoplies, or monopolistic practices, or to eliminate, oppress, or discriminate against small enterprises.

Article XIV. Effective Date.

This Code shall become effective on the second Monday after its approval by the President.

Protest Compensatory Tax

The Chatfield & Wood Sack Company, and the Diem & Wing Paper Company, both of Cincinnati, Ohio, have joined other companies in the United States in a protest to H. A. Wallace, Secretary of Agriculture, against the compensatory tax on paper used in the manufacture of bags.

The tax was declared by Mr. Wallace to offset competitive disadvantages said to have been caused the cotton bag industry by a processing tax on cotton.

At a meeting of paper bag manufacturers in New York City recently they alleged that the tax on paper bags was unjustified and greatly in excess of the tax on cotton.

A Review of the Literature of Sizing

By E. Sutermeister[1]

(Concluded from the issue of the PAPER TRADE JOURNAL *of November 30, 1933)*

Drying and Heating

It seems to be universally recognized that the drying or heating of the paper web has an enormous influence on the sizing obtained, and in this sense it is true that sizing is accomplished on the driers, since paper dried at a low temperature is practically unsized. There is not such good agreement as to the conditions which will produce the best sizing, one investigator claiming that the paper must reach a temperature of 70-80 degrees before its moisture content falls below 50 per cent, while another states that if the web is heated to a temperature of 75 degrees while its moisture content is 45 per cent or more the sizing is generally decreased or even destroyed.

Some evidence is presented that the effect of heating varies to a considerable extent with the amount of size and alum used.

Attention is called to the improvement in sizing when a sheet is dampened and rapidly dried at 110 degrees, and it is suggested that this is due to the shrinkage of the paper rather than the fusion of the rosin. The improved sizing caused by dry heat is also noted by several authors, and an interesting study of the effect of heat on moist rosin-alum precipitates is mentioned.

Klemm (Wochbl. Papierfabr. *39* 1369 (1908)) finds that engine sized papers are not fully ink resistant if dried at too high or too low temperature. He considers 80 degrees about right. This temperature must be reached while the sheet is still wet, as dry rosin does not melt at as low a temperature as when moist. The first drier should not be too hot, then raise the temperature of the paper rapidly to 80 degrees and gradually lower it to the end of the bank.

In a later paper the same author (Paper, Jan. 17, and 24 1923 from Wochbl. Papierfabr.) states that the same web of wet paper may give enormously different sizing results depending on the way it is dried. If it is air dried it is almost unsized. In passing the driers the change in sizing is slight until a critical point is reached, before this it is not much sized, but after it is well sized and the gain over the rest of the driers is slight. Only two or three driers are responsible for the major part of the sizing. The web is still moist after passing this point and the remainder of the cylinders serve merely to remove this moisture. He believes the sizing to be in the nature of a fritting in that adhesion takes place at the points or surfaces of contact. The temperature of the paper must be raised to the fritting point, 70-80 degrees, before the moisture in the web falls below 50 per cent, and fritting must take place before the film of size has dried so much that cracks are formed by shrinkage. Too strong heating causes uneven drying by cockling, and moisture is lost too rapidly before the fritting temperature is reached. Substances which fuse instead of frit do not size well.

Arledter (Papier Ztg. *32* 773 (1907)) had previously studied the effect of different rates of drying. At 11.5 pounds on all driers the sizing was not satisfactory; with 36½ pounds on the first drier, decreasing to 7½ pounds on the last, the paper broke frequently and sizing was uneven; with 7½ pounds on the first drier, 29½ pounds in the middle and 7½ pounds on the last the sizing was perfect. Using a size with 33 per cent free rosin it was found that 20 per cent less size and alum were required at a speed of 148 feet than were necessary at 199 feet. Good sizing required at least 2 per cent of moisture in the paper. His conclusion was that aluminum resinates were precipitated by the alum and that these were decomposed by heat, the rosin acids melting and filling the pores of the paper.

Minor (Tech. Assoc. Papers *6* 93 (1923)) also states that paper taken from the machine before reaching the driers and then air dried is usually poorly sized as compared with that which is dried as usual, and adds that if the amount of alum is insufficient the sizing is not increased by the hot driers. Minton (Tech. Assoc. Papers *14* 249 (1931)) remarks that the temperature at which the water is evaporated affects 14 different properties of the paper. He found that a temperature of 38 degrees would not develop sizing in paper made from well sized stock but that 77 degrees gave good results. Oeman (Papier-Fabr. *26* 705 (1928)) finds that if rosin sized paper with a moisture content of 45 per cent or more is warmed to 75 degrees for one minute the degree of sizing is greatly decreased or even destroyed. The presence of alum does not prevent this decrease. The same author (Svensk Pappers-Tidn. *31* 536, 570 (1928)) heated wet, hand-made sheets between two iron plates in a temperature controlled oven and studied the effect of temperature, time of heating, moisture in the sheet and the pH of the sized pulp. The critical temperature for sizing was found to be 73 to 75 degrees and the critical moisture content about 50 per cent. Higher values were harmful to sizing unless the time of heating was very short—less than one minute. While working on insulating board from corn stalks Sweeney, Hartford, Richardson, and Whittemore (Iowa Eng. Expt. Sta. Bull. 102 (1931)) found that drying temperature affects sizing less than 5 per cent between 49 and 182 degrees. Edge (World's Paper Trade Rev. *89* 616 (1928)) also studied the effect of temperature on sizing but found no sudden change at the melting point of rosin.

Turner (Paper, July 5, 1922) states that there seems to be a certain percentage of rosin above which the effect of heat in the driers is beneficial. Below this point there is a space where it seems to make little difference whether the paper is dried on the driers or in the air at lower temperature. With very small amounts of rosin slow drying at low temperature gives the best results.

An anonymous writer (Paper Making *26* 185 (1907)) states that a poorly sized paper can be made well sized by dampening and rapidly drying at 110 degrees while unstretched. This change is considered to be due, not to the melting of the rosin, but to the shrinkage of the sheet, as it is impossible to get the same results on drying rolls where shrinkage is prevented. Bartsch (Mitt. Materialprufungsamt *29* 53-55) exposed samples of paper to dry heat for 3 hours at 98 and 108 degrees and for 1 hour at 148 degrees. Writing and printing papers, with the exception of one animal sized paper, showed improved resistance to ink, which was greater the higher the temperature. Exposure to a relative humidity of 65 per cent for a few

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weeks caused reversion to the original state, or to even poorer sizing as shown by the ink test. The reversion was slower from the higher temperatures. He believes dehydration to be the cause of the improved sizing. Heilman (Papier Ztg. *32* 311 (1907)) found that a simple heating at a temperature of 105 degrees for a minute improved the sizing of poorly sized papers very greatly. H. Schwalbe (Papier-Fabr. *26* 738 (1928)) studied the effect of heating on papers, one of which gave a sizing test of 240 seconds as it came from the machine, 866 seconds after heating with a flat iron at a temperature of 95 to 100 degrees, and 6540 seconds when the flat iron was at a temperature of 250 degrees.

The effect of temperature on moist rosin-alum precipitates has been studied by Klemm (Wochbl. Papierfabr. *39* 1369 (1908)). When spread on glass in a thin layer and dried at low temperature it formed an opaque, pulverulent layer, broken up by canals or open spaces. If the moist deposit is heated for a short time at 80 degrees and dried at that temperature it forms a varnish-like film, which consists of minute globules of rosin cemented together to form a continuous, but not homogeneous, structure. If the precipitate is air dried it is unaffected by heating at 80 degrees. If the moist deposit is dried at 110 degrees for 5 minutes the film shows numerous fine cracks. The air dry deposit is unchanged by exposing for 5 minutes to a temperature of 110 degrees, but after half an hour becomes translucent, though not continuous.

Calendering

Comparatively little information is available regarding the effect of calendering on the sizing of paper, but what there is seems to prove that it reduces the sizing very materially, especially in the case of water-finish papers. The effect is believed to be due to the breaking of the film of size which coats the fibers.

von Possanner (Papier-Fabr *26* 453 (1928)) studied the change in sizing between a machine finish and that with 3, 6, 12 and 18 passes through the calenders at a pressure of 150 kilos per centimeter (838 pounds per inch). A commercial finish would be given by 12 passes. He found that the sizing decreased to 70-10 per cent of the original value, and ascribed this change to the breaking of the film of size which coats the fibers.

Bennett, Inc. (Service Notes No. 9 May 1931) consider that the sizing material partly covers the fiber surfaces and partly fills the voids and that in calendering the surface film is broken more or less, thus increasing the openings through which water can penetrate. In a water finish paper this is increased by the water which is forced into the sheet and then dried out again. Generally twice as much size is necessary in a water finish sheet as in a dry-calendered paper for the same degree of sizing. Wax size, being more flexible, gives better sizing than rosin under water finish conditions. DeCew (Manufacture of Paper Vol. IV 1st Ed) also recognizes that in water finishing the sizing is practically destroyed on the calenders and states that the paper must be well sized before calendering in order to prevent breaking. He gives the water penetration test as 5 to 15 minutes before calendering as compared with 20 to 100 seconds afterward.

Sizing and Paper Permanence

Under this heading are considered the changes in the sizing of the paper and in its color and strength.

The chief factors which have been investigated in connection with the deterioration of the sizing are light and heat. Practically all observers agree that light destroys sizing and there is some evidence that blue, violet and yellow rays are much more destructive than red and green. It also appears that heat not only does not destroy sizing but that in some cases it will restore it when it has been destroyed by light. The action of light seems to be independent of the kind of fiber in the paper. The silent electric discharge and cathode rays are also injurious to sizing.

No attention seems to have been given to the effect of oxygen or the possible impurities in the atmosphere. Moisture, either at room temperature or higher, seems also to have been neglected as well as the degree of acidity of the paper.

The discoloration of paper with age has attracted much attention and the general consensus of opinion seems to be that it is due largely to rosin and is increased by the presence of iron, particularly as ferrous resinate. These opinions are based on papers containing no groundwood. The amount of rosin which may be permitted without causing serious yellowing is not definitely determined, but one investigator believes that up to one per cent is safe.

Loss of strength of paper with passage of time was at first attributed to the oxidizing action of the rosin, but more recent work is swinging opinion to the point of view that deterioration is caused by the acidity connected with the use of alum. It is also noted briefly that sizing reduces the strength of paper. Work along this line seems entirely inadequate when considering the importance of the questions involved.

Permanence of Sizing.

Herzberg (Chem. Ind. *19* 137 (1896)) exposed papers between double windows, facing east. After four months (June 13 to Oct. 26) four samples were only about half sized, while the other, which was made of inferior fiber, was still fully sized. Other experiments showed that loss of sizing was very rapid in paper sized by an ether solution of rosin. Animal sized papers also lost sizing, whether exposed to light or protected by a covering, while the covered portion of rosin sized papers retained its sizing. Papers heated at 98 degrees did not lose their sizing, even when the heating was so prolonged that the paper crumbled on handling. The composition of the pulp seemed to have no influence on the deterioration of sizing. An anonymous writer (Papier Ztg. *21* 492) also remarks on the destruction of sizing by sunlight and notes that rosin and tannin resist the action better than rosin alone. He found the action more rapid on glazed than on unglazed papers.

Zhereboff (Bumazhnaya Prom. *1* 25 (1922)) confirms the preceding statements and finds that all papers, irrespective of composition, lose in sizing fastness on exposure to light. The action is rapid enough to show in 10 days and after 1½ to 2 months all papers become slack sized. He found violet, blue and yellow rays most destructive, while red and green had little effect. The rays of different colors were obtained by filtering light through colored glasses and presumably the source of light was the sun. Ivanov (Bumazhnaya Prom. *2* 634 (1923)) studied the effect of light from an arc lamp. This was found to destroy sizing in 20 hours without changing the penetrability of the paper to air. Ironing on a hot plate restored the sizing and gave the paper an electric charge which disappeared on exposure to the arc. Paper exposed to the arc light at a temperature of 110 degrees turned yellow and lost its sizing; this was not restored on ironing but was partly restored by exposing to the same arc behind a red glass for 5 hours. On treating paper which had been yellowed by arc light at 110 degrees with a ½ per cent solu-

tion of $Al_2(SO_4)_3$ for half an hour and drying in the air or on a hot plate its original color was restored but its sizing returned only on drying on a hot plate. Exposure to a silent electric discharge unsized the paper in spots and this could be corrected by ironing or exposure to red rays. Cathode rays for one minute destroy sizing completely without change in appearance, and here, again, ironing restores sizing. Ivanov concludes that sizing depends on the electrical condition of the paper and that alum added to the beater is the determining factor, because of its positive charge.

YELLOWING OF PAPER.

The yellowing of paper with age has interested many investigators. Schoeller (Wochbl. Papierfabr. *43* 3222 et seq. (1912)) considered auto-oxidation of the rosin the chief cause of yellowing and believed the color change could be prevented by oxidizing the rosin previous to size making. Klason (Paper Trade J. *57* No. 17, 46 (1913)) found that American rosin, when exposed to light during the summer months increased about 9 per cent in weight and became darker in color. He concluded that moderate rosin sizing would not cause deterioration with age though an excessive amount of rosin would discolor it because of the oxidation products formed. He considers overbleaching and contamination with dust containing iron the chief causes of discoloration and the best protective measures supercalendering and surface sizing.

Except for groundwood Zschokke (Wochbl. Papierfabr. *44* 2976, 3165 (1913)) considers rosin almost the sole cause of the yellowing of paper. He finds the change accelerated by heat and light, but not much influenced by atmospheric oxidation. He believes that paper with less than 1 per cent of rosin will not discolor seriously and that accelerated ageing tests will show whether a paper will discolor but not the extent of such a change. Hitchins (Paper, *22* No. 20, 11 (1918)) concluded that rosin alone would cause the yellowing of paper and that the degree of discoloration was affected by the presence of iron. With a given amount of rosin yellowing is nearly proportional to the amount of iron present. Glue or gelatin, as in tub sizing, accelerate the yellowing. In order of importance in developing yellowing are light, moist heat and dry heat. Kimberly and Hicks (Bur. Standards J. Research *6* 819 (1931)) also believe the yellowing of paper with age may be due to light sensitivity of the rosin and ferrous resinate. Scoeller (Wochbl. Papierfabr. *43* 3222 et seq. (1912)) points out that noticeable discoloration of the paper does not take place until the proportion of iron in the form of resinate amounts to 0.04 per cent of the total rosin present. This appears to refer to immediate discoloration rather than that caused by ageing.

The restoration of yellowed paper to its original color by treating it with a 0.5 per cent solution of alum and drying in the air or on a hot plate is mentioned by Ivanov (Bumazhnaya Prom. *2* 634 (1923)).

STRENGTH.

The change in strength of papers over a period of time is of great importance for books and papers of permanent value and as early as 1895 accelerated ageing tests by means of heat were used to demonstrate the durability of papers. An anonymous writer (Papier Ztg. *89* 2834 (1895)) believes that decrease in strength is caused by the rosin in the paper and that it acts as an oxidizing agent, forming ozone which then attacks the fibers with the formation of oxycellulose. Evidence by Klason seems to be contradictory. He is quoted by an anonymous writer (Paper, April 23, 1913) as saying that auto-oxidation of rosin has no influence on the tensile strength of the paper, while a translation of a paper by him (Paper Trade J. *57* No. 17, 46 (1913)) states that moderate rosin sizing will not cause deterioration of the paper with age, but that excessive amounts of rosin will make it brittle because of the oxidizing action of the peroxide first formed by the rosin. The latter statement appears to apply to such large amounts of rosin as half the weight of the paper.

Hofmann (Papier Ztg. *30* 3584 (1905)) points out that sizing diminishes the tensile strength of the paper. This appears to be an immediate effect rather than one caused by time. The immediate effect on the strength of the paper is apparently meant by DeCew also (Manufacture of Pulp and Paper, Vol. 4 1st Ed.) when he states that the binding power of rosin in paper is greater than the natural adhesion of ground-wood or waste paper fibers, but less than that between sulphite, sulphate or rag fibers. Köhler (1st Communications New Intern. Assoc. Testing Materials. 1930 Group C, 186) used the folding strength to measure stability, and heat and sunlight for accelerated ageing tests. He found that rosin sizing increased the acidity of the paper, depending on the rosin-alum ratio and that a high acid number in the paper indicated low stability. Aluminum acetate and sulphate were equal in their effect on paper. He considered that the use of rosin in permanent papers was permissible only when an excess of alum was avoided. The acidity of a surface size, whether animal or rosin, did not seem to affect the stability of the paper.

Sizing Tests and Rosin Determinations

As many as thirty eight methods for testing papers for sizing are described and studied and wide discrepancies found, even among the various types of penetration tests. It was even found that variations in beating the paper stock affected two penetration tests quite differently. It seems almost hopeless to expect to find any one method of testing which will evaluate a paper for all purposes and it would seem very desirable to make a careful study of the various uses of paper to see if it were possible to standardize on definite sizing tests for each particular use. It is highly probable that the tests necessary to evaluate a paper for writing, printing, or use in coating would be very different, even though they might be applied to the same sheet.

When paper is to be analysed for rosin it must be treated with an acid before extraction, if all the rosin is to be taken out. The acid used with the alcohol makes a difference, sulphuric being more effective than acetic.

There is some evidence that alcohol will remove the free rosin and ether will take out the remaining aluminum resinate.

SIZING TESTS.

Schapira (Papier-Fabr. *26* 609 (1928)) and Corson (Technologic Paper of the Bureau of Stds. No. 326 (1926)) both describe, classify and discuss the various methods for testing paper for sizing. From a study of 38 methods Carson concludes that the dry-indicator method and the curl method give the most consistent and dependable values for degree of internal sizing. In two earlier papers Carson (Paper Trade J. Oct. 23, 1924 and Tech. Assoc. Papers *8* 91 (1925)) describes the curl tester and the dry-indicator method respectively. Abrams (Tech. Assoc. Papers *12* 49 (1929)) also compares the curl and dry-indicator methods and concludes that on thin papers they will give reasonably concordant results. Directions are given for making each test without apparatus. In two papers Codwise (Tech. Assoc. Papers *14* 175 (1931) and Paper Trade J. Feb. 4, 1932) reports on a study of the

dry-indicator method and gives detailed directions and precautions.

An electrical conductivity method is described by Okel (Paper, April 11, 1917) and the Valley size tester, which was based on Okel's method, is briefly described by an anonymous writer (Paper, Feb. 1, 1922). Carson (Paper Trade J. April 6, 1922) gives a lengthy discussion of Okel's method and concludes that it is adaptable to research, but hardly to routine work. Alexander (Tech. Assoc. Papers *6* 37 (1923)) studied the Valley tester and found that its results were greatly influenced by the furnish and formation of the sheet. He found no relation between the Valley test and the ink flotation test and concluded that the Valley tester could not be used for comparing the sizing qualities of different grades of paper. Caust (Tech. Assoc. Papers *6* 39 (1923)) compared the Valley and ink flotation tests on 24 book papers and found a general agreement, with variation from the average slightly favoring the Valley test.

Albrecht (Pulp Paper Mag. Can. *24* 1065 (1926)) describes a modified method for carrying out the ink penetration test. This is not essentially different in principle from the ordinary flotation method.

Sammet (U. S. Bureau of Chem. Circular 107) tests the sizing of high grade surface sized papers by drawing a strip of the paper over an iron tannate ink, allowing it to drain and dry naturally. The surface is then examined with a magnifying glass to show differences in ink absorption. Codwise (Tech. Assoc. Papers *13* 200 (1930)) studies the surface sizing by applying a drop of water and noting the time for feathering to start.

Edge (World's Paper Trade Rev. *89* 616 (1928)) worked with hand made sheets which were dried by pressing between blotting papers on a metal plate on a steam bath. Using the penetration test of ammonium thiocyanate against ferric chloride he found the time to vary approximately as the cube of the bulk. He expressed his results as a "sizing figure"—100 P/B^3—in which P is the time of penetration in seconds and B is the bulk. He found this sizing figure to be a linear function of the temperature of drying, but the constants of the equation varied with the grade of paper. When employing this test variations in beating showed far less effect than when the test was made with a colloidal ink.

Dreschel (Papier-Fabr. Fest Auslands Heft 1931 97) compares tests made with writing ink and linseed oil on 10 different papers and shows that there is no relation between the grading of the papers by the two methods. He emphasizes the importance of testing the papers in ways which will duplicate, as nearly as possible, the uses to which they are to be put.

Abrams (Paper Trade J. Jan. 20, 1927) describes the "Penescope," an instrument devised to test board, paper, etc., for their penetrability to fluids, and Libby and Casciani (Paper Trade J. May 19, 1932) mention a modification of the instrument with a temperature control jacket, and give curves showing the effect of temperature, strength of lactic acid used and hydrostatic head on the testing solution.

Hendrickson (Paper Mill *54* No. 45, 5, 24 (Nov. 7, 1931)) carried out experiments to show whether the apparent variations in the sizing of papers used for coating were due to variations in the size, to production variations or to the methods of determining the degree of sizing. He tried the ink test, water penetration test, Valley test and porosity test and found them to be affected by factors which cause erratic results. The ink test was subject to more variations than the others, but they were greatly reduced by making the test at 95 degrees F. The water penetration test was fairly satisfactory, but the difference between samples were not as great as desirable. The Valley test was reproducible and not as much affected by atmospheric conditions as the ink flotation test, but the porosity test bore no relation to the others.

ROSIN DETERMINATIONS.

Griffin (J. Am. Chem. Soc. *27* 258 (1905)) found that alcohol would not extract all the rosin from paper until it had been treated with acid. Remington Bowack and Davidson (J. Soc. Chem. Ind. *30* 949 (1911)) state that the extraction of commercial papers by ether removes from 66 to 90 per cent of the total rosin and that the extracted papers were not completely unsized.

Neugebauer (Z. angew. Chem. *25* 2155 (1912)) states that the free rosin in paper may be extracted by alcohol of 0.8773 sp. gr. This does not dissolve basic aluminum resinate, but ether will dissolve both. Basic aluminum resinate contains 3.8 to 4.2 per cent of Al. (The theoretical is 3.7 per cent if the molecular weight of rosin is 353). Bouvier (Mon. papeterie française *53* 99 (1922)) also claims that extraction of sized paper with alcohol will remove free rosin and subsequent extraction with ether will take out the aluminum resinate. He found about 50 to 70 per cent of the rosin in the paper to be present in the free state, the amount depending on the size milk used. Sutermeister and Torrey (Paper Trade J. Jan. 21, 1932) find that the usual extraction of paper with alcohol acidified with acetic acid will not remove all the rosin, nor will this treatment followed by extraction with ether. If sulphuric acid is used in place of acetic, practically complete extraction is obtained but it is necessary to siphon the solvent many more than the 12 times recommended in the standard method.

Edge (World's Paper Trade Rev. *89* 616 (1928)) states that the rosin content of the paper does not necessarily bear any relation to its sizing, and (Ibid *92* 1974 (1929)) that when conditions of maximum sizing are adhered to there is a decrease in sizing when more than 0.7 per cent of rosin is used.

Special Processes and Patents

Under this heading have been included those processes or patents which cannot be readily placed under any of the other classifications. The present list is, therefore, not complete and both special methods and patents will be found under other headings, notably "Size Making and Dissolving," "Alum Substitutes" and "Wax Sizing and Carbonate Filler."

Mechanical dispersions, as produced by colloid mills, have been shown to be possible sizing agents, but they do not appear very promising.

Among rosin substitutes or assistants are stearinamide, viscose, "feculose" and alkali salts of fatty acids. The use of protective colloids, such as casein, glue and starch, and of other substitutes and assistants will be found mentioned under "Size Making and Dissolving."

Brief mention is made of surface sizing at various points on the paper machine and a number of papers relating to the use of rubber latex are cited. The impression produced is that latex does not improve sizing or strength enough to justify its use.

Two similar processes, which utilize gels produced from glue or vegetable size, are mentioned, but appear to be applicable only in special cases.

The chief points of some of the more important patents are noted.

MECHANICAL DISPERSIONS.

Wieger (Papier-Fabr. *28* 113 (1930)) in a paper on

sizing problems, mentions the Bewoid process, which appears to consist of mechanical dispersion of rosin in a colloid mill in the presence of a little casein but without alkali. He claims that dispersions of 10μ particle size give no sizing effect; the best results seem to be obtained with a particle size of about 1μ. In a later paper (Paper Maker and Brit. Paper Trade J. *82* No. 2 XXXIII (1931)) he states that the optimum particle size lies between the colloidal and the coarsely dispersed states. He also says that with 100 per cent free rosin there is practically no sizing and the best free rosin content is about 95 per cent, which would indicate that some aluminum resinate is necessary to obtain sizing effects. Uzac (Rev. gén. colloides *4* 257 (1926)) has also sized papers with rosin powdered very fine. When it is ground in a ball mill in the presence of hydrated alumina it forms a smooth paste which readily emulsifies with water, but twice as much has to be used as when it was applied in the form of soap, or it has to be ground so very fine that it has no advantage financially.

Dry Sizes.

Johnstaone (U. S. 1,834,844) adds substantially anhydrous, finely divided size to the fibers while they are suspended in water, while Dreshfield (U. S. 1,836,455) adds to the stock a size in the form of an impalpable powder, which consists of rosin saponified with an alkali and mixed in the dry condition with about twice its weight of alum.

Rosin Substitutes or Assistants.

Stearinamide as a rosin substitute has been mentioned by Müller-Jacobs (Z. angew. Chem. *18* 1141 (1905)), Spiess (Papier Ztg. *33* 1487) and von Possanner (Papier Ztg. *35* Nos. 80 and 81 (1910)). This material is dissolved or emulsified in a soap solution and added to the beater. It is said to be permanent, neutral, and chemically inactive, but it is too expensive for cheap papers.

Viscose as a paper size is mentioned by Beadle (Paper Trade J. Nov. 1, 1906).

In a discussion of size assistants Traquair (Paper, April 7, 1920) claims that if both size and alum are protected by "feculose" the precipitate will be so fine as to be invisible under the microscope and the sizing will be greatly improved. Hamill, Shaw and Bicking (Paper Trade J. Jan. 20, 1927) give the results of extensive tests of glue as a beater size. They found the retention of glue to be at a maximum at a pH of 4.5. It was found to increase the hardness and rattle of the paper and when used with rosin size it frequently improved the sizing. It did not improve the retention of clay.

Kolb (Papier-Fabr. *19* 1141 (1921)) suggests the use of alkali salts of fatty acids as substitutes for rosin size.

Surface Sizing.

Lockett and Baker (Eng. 15,417, July 27, 1905) apply size to the web of paper on the delivery side of the couch roll or at some point on the wet felt. A V-shaped trough and Duxbury rollers are used.

Fues (Papier Ztg. *39* 2719 (1914)) uses a size tub on the paper machine, in which are rosin size, a protective colloid, as glue, and the precipitating agent, as alum. The paper is passed through, pressed and dried. It is claimed that the mixture of rosin size, animal size and alum does not precipitate even on boiling.

According to the Bureau of Standards (Bur. Standards Tech. Bull. 162 (1930)) when surface sizing, the amount of starch retained and the increase in strength were inversely proportional to the amount of rosin present in the base paper. Cyster (Paper, May 19, 1915) also studied surface sizing and showed how the gelatin absorbed decreased as the rosin sizing increased.

Solvent Sizing.

This term is applied by Minton (Pacific Pulp Paper Ind. *5* No. 12 26-29 (1931)) to the process in which the unsaponified rosin is dissolved in some solvent, as carbon tetrachloride or ethylene dichloride. The solution is applied to the dry, unsized paper by spraying or passing the paper through a bath of the solution and the solvent is then evaporated and recovered.

Rubber Latex

The use of rubber latex in sizing paper and as a means of increasing its strength has recently received much attention. Shaw and Bicking (Paper Trade J. Dec. 28, 1922) recorded tests at the Bureau of Standards in which 1 and 2 per cent of rubber was used in book, wrapping and writing papers. They found a slight increase in bursting strength, but no significant change in tear, fold or breaking length. Shaw and Carson (India Rubber World *68* 561 (1923)) studied the effect of age on papers containing rubber and found that with lapse of time the acetone extract (resins) increased, while the chloroform extract (rubber) decreased. With sulphite and soda papers the rubber content decreased practically to zero in 12 to 16 days.

Van Rossem and Frenzyl (Paper Nov. 15, 1923) conducted laboratory scale experiments using from 0 to 6 per cent of rubber latex, from 0 to 3 per cent of rosin and mixtures of rosin and latex. They found that the folding endurance was decreased by rosin alone and increased by latex, either with or without rosin. Elongation was hardly affected. Latex had some sizing effect, but not as much as rosin. A paper by Beckering-Vinckers (Papier-Fabr. *22* 129 (1924)) discusses chiefly the effect of rubber on the physical properties of the paper, and one by Fenchel (Papier-Fabr. *22* 313 (1924)) gives a critical review of work with rubber latex. His conclusion is that its use is not justified except in special cases.

Levin (India Rubber World *75* 83 (1926)) states that the Geer test indicates that abietic acid has a very deleterious action on the ageing of vulcanized rubber and believes that this may account for the results obtained by the Bureau of Standards when using rubber latex in paper, (Shaw and Carson, above).

Gel Processes.

A patent to Zellkoll Ges. (Brit. 147,006 July 6, 1920) specifies the use of animal or vegetable size which has been allowed to swell in water and partly fixed as a gelatinous mass by formaldehyde or other hardening agent. Ferenczi (Paper Jan. 5, 1921) describes the same process, mentioning formate of aluminum as well as formaldehyde as hardening agents. The nature and amount of such agents determine the melting point of the jelly, so that it can be made to melt at a definite temperature on the driers. It is claimed to increase retention and to produce a strong, hard and rattly sheet.

Westarp (Paper Trade J. *78* No. 14, 77 (1923)) describes the "Asa" process which appears to be identical with those just mentioned, except that the hardening agent is supposed to be secret. One per cent of "Asa" glue and 0.25 per cent of rosin are claimed to give as good results as 4 per cent of rosin.

Miscellaneous.

Under this heading have been collected a number of ob-

servations and patents which do not appear to fall logically under any other classification.

Wickham and Shaffer (Pulp Paper Mag. Can. 27 920 (1929)) describe the so-called "Buffer Process" for making sized liner board. In this process the liner stock is sized in the beater as usual and in the vat next the liner a slight acidity is maintained by adding alum with a dry feeder. It is claimed that the sizing of the liner is not destroyed by alkaline filler stock.

Arledter (Ger. 231,560 Aug. 25, 1909) describes an electrical method for sizing in which the pulp containing colloids, resin compounds, metal compounds, etc., in solution, is led onto the paper machine and an electric current passed through it.

Khinchin and Kukis (Russ. 38,274 Filed Jan. 7, 1929) add an aqueous solution of caustic soda or sodium carbonate (0.5-1.0% on the weight of fiber) either before or at the same time the rosin size is incorporated, while DeCew (U. S. 1,317,619 Sept. 30, 1920) adds to the beater sufficient caustic soda or other alkali so that the concentration of basic ions will prevent the precipitation of alkaline earth resinates; size and alum are then added as usual. With regard to the Khinchin process Ivanov (Bumazhnaya Prom. *9* No. 8-9, 45-54 (1930)) claims that it saves 25 to 30 per cent of the usual rosin consumption and reduces foaming at the machine.

Gemel and Milne (Brit. 104,012 Feb. 12, 1916) prepare size with borax or ammonia or both, with or without soda, and add a precipitant, such as aluminum sulphate, to the size before it is added to the stock. DeCew (U. S. 1,799,216 April 7, 1931) permits streams of alum and size to mingle just before they are added to the stock.

DeCew (U. S. 1,300,357 April 15, 1919) treats the stock in the engine with sodium aluminate and separately with rosin soap solution containing free rosin acids in the colloidal state.

In order to improve sizing Booth (U. S. 1,713,642 May 21, 1929) first adds size and alum to the stock and then aluminum sulphate and sodium carbonate, or other substances which react to form metallic hydroxides, before or at the time of delivering the stock to the paper making apparatus.

As a rosin precipitant DeCew (U. S. 1,663,976 March 27, 1928) uses alum which has been made basic after dissolving but before it has a chance to react with the size.

In a number of patents DeCew claims different methods of adding size and alum. U. S. 1,753,775, April 8, 1930, treats the pulp with enough alum to render the fibers astringent and make the surrounding solution have a pH of 5.0 to 6.8, after which the size is added. In U. S. 1,585,469, May 18, 1926, the fibers are treated in the beater with aluminum sulphate and a stream of size added as the stock enters the jordan, while in U. S. 1,589,947, June 22, 1926, both size and alum are added to the paper stock after it has passed the jordan.

Wax Sizing and Carbonate Filler

Wax sizing is as old as beater sizing with rosin, but since the development of satisfactory methods for using rosin, wax has seldom been employed. Early wax sizings were made with beeswax or similar products, but with the advent of the colloid mill and the improvement in methods for producing stable emulsions attention was directed to the use of paraffin. The information regarding modern wax sizing relates, therefore, largely to paraffin, though other waxes are sometimes combined with it or used separately for special purposes. The information relating to wax sizing is somewhat scanty and it seems that it may be considered as still in its development stage, although relatively old in principle.

The subject of "Carbonate Filler" has been combined with that of "Wax Sizing" because ordinary rosin sizing is ineffective when an alkaline filler is used and in the present state of our knowledge a paraffin emulsion seems to be the only sizing agent which is even moderately effective when a filler such as calcium carbonate is used.

Wax Sizing.

There are numerous references in the literature to wax sizing, but most of them relate to the preparation of special products rather than to the sizing of paper as ordinarily understood in the case of rosin, so they are not included here. A few of the recent papers which seem pertinent follow.

Wieger (Paper Maker and British Paper Trade J. *78* 389 (1929)) discusses briefly the advantages of wax sizing and the characteristics of wax sized papers. Kumler (Paper Mill *53* No. 23, 14 (1930)) describes the merits and methods of using rosin-wax size, and its effect on strength bending qualities, finish, color, curling, permanence and water resistance of the paper. Lafontaine (Paper Mill *53* No. 19, 10, 20-24 (1930)) considers that the factors in producing the best results are (1) well made size, adapted to the particular mill conditions; (2) thorough dispersion of the size particles in the stock; (3) good retention of the precipitated size by the fibers, and (4) proper fluxing of the size in the sheet. Lodge (U. S. 1,792,382 Feb. 10, 1931) states that with 3 per cent of rosin size, 1 per cent of paraffin and 3 per cent of alum the strength of the paper is reduced 20 per cent or more. When only rosin and alum are used the rosin retention is only 29 per cent, but with the above combination of materials it is 90 per cent.

Nietzke (Paper Trade J. Nov. 3, 1932) gives the results of laboratory tests using bleached sulphite and no filler and shows that in nearly every case 65 pounds of wax size (20 wax to 80 rosin) had a sizing value equal to 100 pounds of rosin. The wax size shows increasing superiority over rosin size with increasing percentages used and at temperatures of 150, 200 and 250 degrees F. With varying proportions of wax to rosin the maximum sizing was obtained with about 28 wax to 72 rosin.

DeCew (U. S. 1,174,697 Mar. 7, 1916) advises adding paraffin wax to a free rosin size before emulsifying. For sizing only, the wax may amount to 15 per cent of the weight of rosin, but for waxed, or semi-waxed papers up to 50 per cent of the weight of rosin may be used. Rafton has patented (U. S. 1,803,644 May 5, 1931) a method of sizing paper which consists in furnishing the fibrous stock to the beater followed by rosin size and a substantially nonbreakable paraffin emulsion. After thoroughly mixing a filler, such as clay or talc, is added, followed by alum. A satisfactory nonbreakable emulsion may be made from 15 parts paraffin, 1 part gum ghatti, 1 part dextrin and 83 parts water.

Carbonate Filler.

While calcium carbonate has been used in certain types of paper for a great many years it is only within comparatively recent times that attempts have been made to produce sized paper when it was present. In spite of the apparent impossibility of sizing such papers with rosin Capazza took out a patent for the purpose (Eng. 5,776 March 16, 1899). He furnished the pulp in lime water and passed carbon dioxide in until the lime was neutralized. Rosin soap was then added and the passage of carbon dioxide continued to precipitate the desired amount of

rosin. Finally a little alum was added if necessary. As an example of this process he recommended materials in the following proportions:—100 kilos pulp, 10 kilos concentrated solution of rosin soap, 10 kilos of concentrated alum solution and 20 kilos of precipitated calcium carbonate.

Rafton has taken out a group of patents (U. S. 1,803,642, 1,803,643, 1,803,645 to 1,803,652 inclusive, all of May 5, 1931) which relate to wax sizing when an alkaline filler, such as calcium carbonate, is used. Two of these— 1,803,646 and 1,803,649—relate more to the elimination of foam than to the production of sized papers. Several specify the use of the essentially nonbreakable emulsion mentioned in connection with U. S. 1,803,644, while the basic principle of most of them is to add one of the chief ingredients —size, alum, or filler—at the wet end of the paper machine after the stock has been diluted, so as to avoid undesirable chemical action as far as possible.

In another group of patents (U. S. 1,808,067 to 1,808,073 incl.) Rafton gives other methods of sizing paper containing alkaline filler, or waste coated paper containing casein and calcium carbonate. These do not involve the use of paraffin emulsions but include the use of sodium silicate, size and alum added in various combinations and at various times in the process.

THE END.

Bids for Government Paper

WASHINGTON, D. C., January 3, 1934—The Government Printing Office has received the following bids for 77,600 pounds of 50 per cent rag white index paper: Prudential Manufacturing Company, at 8.93 cents per pound; Perkins-Goodwin Company, 9.83 cents; Whitaker Paper Company, 9.25 cents; P. R. Andrews Paper Company, 11.28 cents.

For 35,400 pounds of mimeograph paper: Prudential Manufacturing Company, 5.53 cents; Whitaker Paper Company, 6.9 cents; Dill & Collins, Inc., 6.2 cents; Corril A. Hubbard, 6.25 cents; Perkins-Goodwin Company, 6.645 cents; R. P. Andrews Paper Company, 7.9 cents, and Reese & Reese, Inc., 9.9 cents.

For 4,000 sheets of red railroad board: Virginia Paper Company, at $36.30 per M sheets; Old Dominion Paper Company, $37.39; L. Hyman & Sons, $38.20; Reese & Reese, Inc., $36.22; R. P. Andrews Paper Company, $38.00; Mathers-Lamm Paper Company, $36.99; and Walker-Goulard-Plehn Company, Inc., $38.12.

For 5,000 sheets white railroad board: Virginia Paper Company, $44.65; Old Dominion Paper Company, $45.99; L. Hyman & Sons, $46.66; Reese & Reese, Inc., $44.41; R. P. Andrews Paper Company, $46.00; W. L. Jones, Inc., $45.65; Mathers-Lamm Paper Company, $45.52; and Walker-Goulard-Plehn Co., Inc., $47.00 less 2 per cent.

For 34,500 pounds of colored sulphite writing paper: Aetna Paper Company, at 6.75 cents per pound; Cauthorne Paper Company, 5.96 cents; Perkins-Goodwin Company, 4.78 cents, and 4.88 cents; and R. P. Andrews Paper Company, 7.15 cents.

For 2,000 pounds of plate wiping paper for embossing presses: R. P. Andrews Paper Company, at 8.23 cents per pound; Reese & Reese, Inc., 6.55 cents; Aetna Paper Company, 6.5 cents; Barton, Duer & Koch Paper Company, 6 cents; and Whitaker Paper Company, 5.4 cents.

For 312 pounds of red sulphite paper: Tarentum Paper Mills, at 12 cents per pound; Mathers-Lamm Paper Company, 13.9 cents.

For 2,015 sheets of 22 x 28 photo mount board: Reese & Reese, Inc., at $80.00 per M sheets; Old Dominion Paper Company, $45.98; R. P. Andrews Paper Company, $85.80; Charles G. Stott & Company, Inc., $84.90; Milton Bradley Company, $93.60; George F. Muth & Company, $87.00; Mathers-Lamm Paper Company, $18.60 and $70.80; Barton, Duer & Koch Paper Company, $85.00; and Whitaker Paper Company, $80.00.

For 10,000 sheets of gray photo mount board: Mathers-Lamm Paper Company, at $45.20 per M sheets; Reese & Reese, Inc., $41.16; Whitaker Paper Company, $41.40; R. P. Andrews Paper Company, $46.20; Milton Bradley Company, $52.80; Charles G. Stott & Company, Inc., $45.90; Barton, Duer & Koch Paper Company, $41.80; George F. Muth & Company, $51.00.

For 168,000 pounds of mimeograph paper: Dill & Collins, Inc., at 8 cents per pound; Old Dominion Paper Company, 9.99 cents; Perkins-Goodwin Company, 6.71 cents; Barton, Duer & Koch Paper Company, 11.75 cents; R. P. Andrews Paper Company, 7.9 cents; Whitaker Paper Company, 6.9 cents; Reese & Reese, Inc., 9.95 cents; Virginia Paper Company, 9.845 cents.

For 16,050 pounds of blue ledger paper: Old Dominion Paper Company, at 23.33 cents per pound; Perkins-Goodwin Company, 22.93 cents; Barton, Duer & Koch Paper Company, 22 cents; R. P. Andrews Paper Company, 23.36 cents; Whitaker Paper Company, 22.6 cents; Reese & Reese, Inc., 22.8 cents; Mathers-Lamm Paper Company, 21.388 cents; Virginia Paper Company, 22.75 cents; Walker-Goulard-Plehn Company, Inc., 17 cents; and Carew Manufacturing Company, 21.92 cents.

Seinsheimer Paper Co. Changes Name

On and after January 1, 1934, the Seinsheimer Paper Company of Cincinnati, Ohio, will change its corporate name to the Clopay Corporation, which will manufacture various paper specialties for which they have established a national reputation.

The officers of this corporation will consist of the following: L. A. Seinsheimer, president; S. J. Johnson, vice-president; A. L. Thexton, vice-president; G. H. Landwehr, secretary and Walter Seinsheimer, treasurer.

A new corporation is to be formed to take over the distribution of lines formerly handled by the old company and is to operate under the name of Seinsheimer Paper Corporation, the officers of which will be as follows: A. C. Klemm, president; A. G. Zimmerman, vice-president; G. H. Landwehr, secretary; H. A. Wolsdorf, treasurer, and its business will be continued in new quarters at 260 West Mitchell Avenue, Winton Place, Cincinnati, Ohio, which is a short distance from its old location.

The trade will observe that from this date on, correspondence and other communications intended for the Seinsheimer Paper Corporation is to be addressed to 260 West Mitchell Avenue, and for the Clopay Corporation to York and McLean streets, Cincinnati, Ohio.

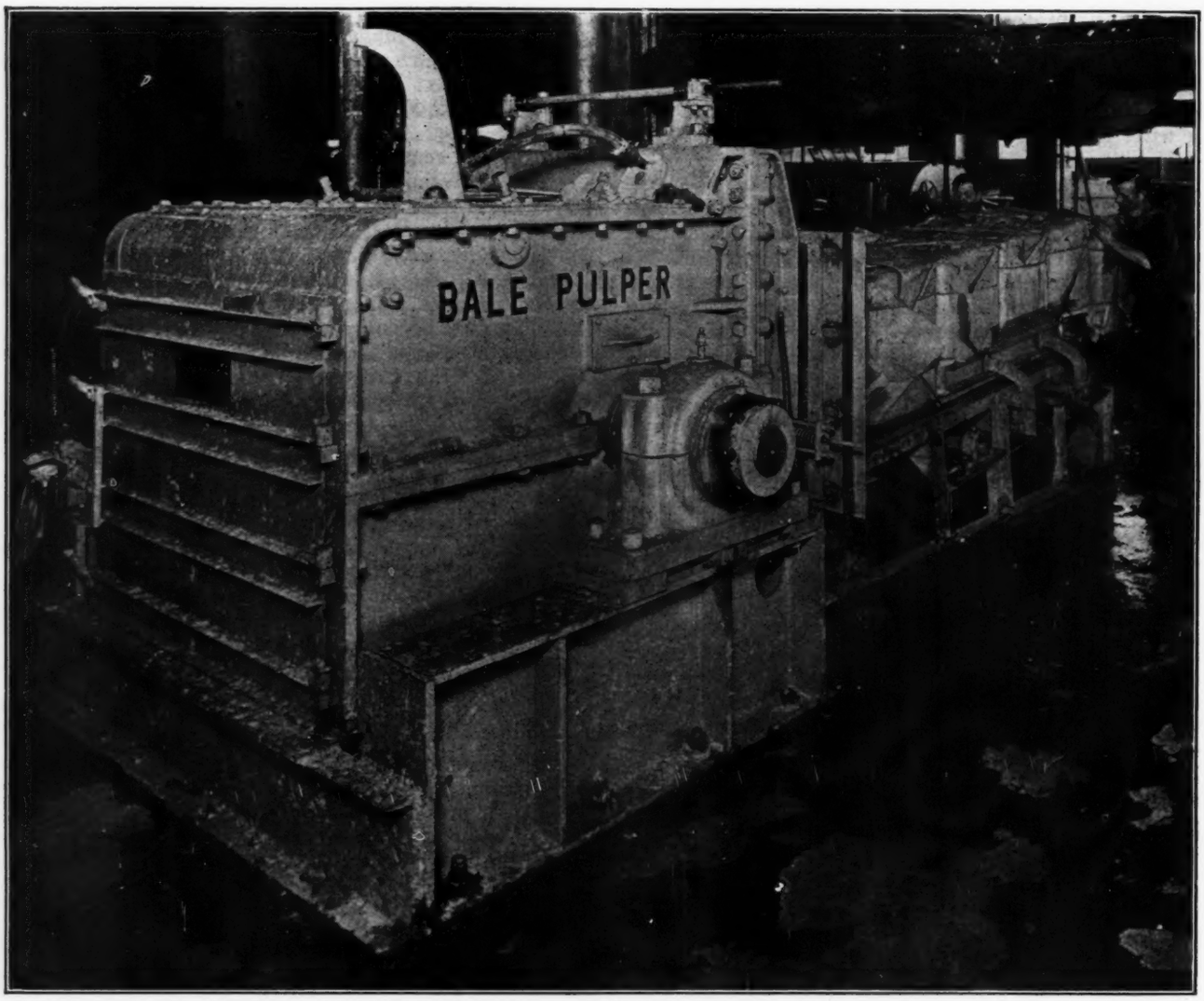
A. R. Palmer Appointed NRA Authority

WASHINGTON, D. C., January 3, 1934—General Hugh S. Johnson has announced that Albert R. Palmer, president of United Wall Paper Factories, Inc., New York City, has been appointed NRA member of the wall paper manufacturers code authority in place of Frank Kelley, Jr., who resigned.

Louis W. Adams Weds

Louis W. Adams, of the Association of News Print Manufacturers of the United States, and a native of Dayton, Ohio, was married to Miss Irma Mann, of Dayton, at Holy Angels' Church, Dayton, on Saturday, December 23. Mr. and Mrs. Adams will make their home in 333 Central Park West, New York.

This is the Bale Pulper TRADE NAME *built by the Sturtevant Mill Co. for Slushing Dry Sheet Pulp*



It has the following unique and modern advantages

Thorough Defiberization:
For toweling, blotting and impregnation work, or for bleaching, only light brushing out in Jordan is necessary.

Increased Beater Capacity:
Installed before beaters, it greatly increases beater capacity, and permits furnishing them with stock of high consistency. In one mill it replaced five beaters.

Increased Machine Speed:
Sturtevant Bale Pulper before Beaters, will enable you to develop stock more and increase machine speed.

Applied to All Pulps:
For brushing out soda, ground wood, kraft and sulphite, at low cost.

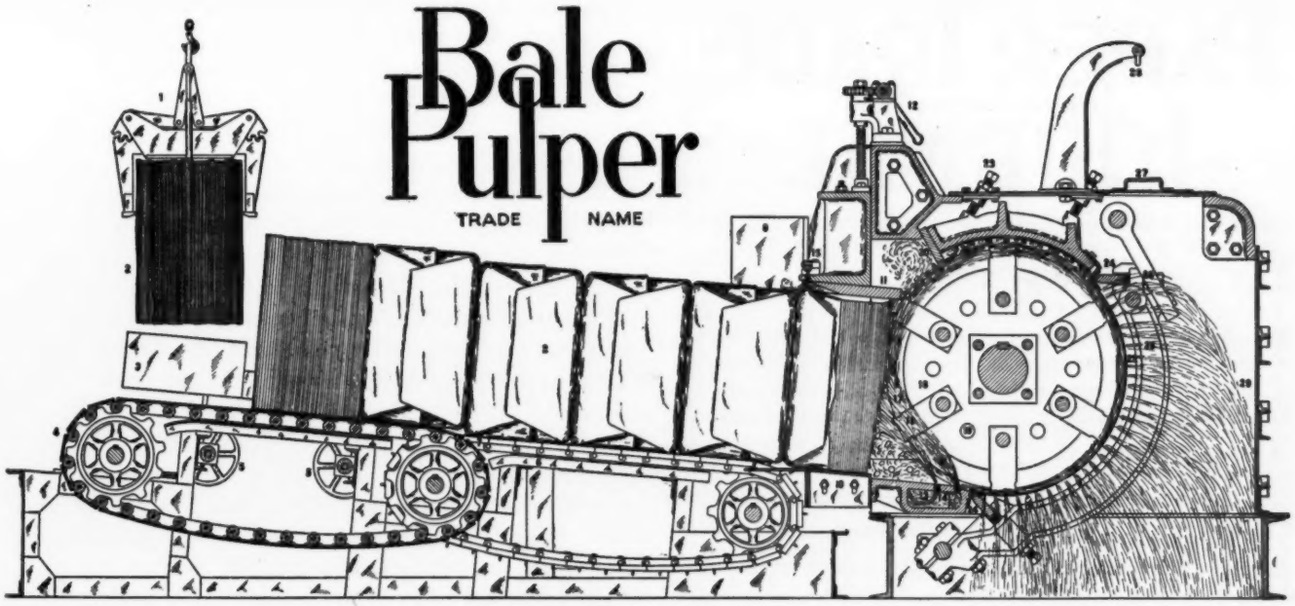
Not a Shredder:
A saturated surface "Combing Action" prevents "Fish Eyes" and reduces power load.

Heavy Construction
Low Maintenance:
Sturtevant Bale Pulper is designed and built along rugged lines for continuous mill operation.

STURTEVANT MILL CO. *HARRISON SQUARE* **BOSTON, MASS., U. S. A.**

Bale Pulper

TRADE NAME



U. S. Patent 1,910,382. British Patent 398,747

AND MORE TO COME

10 Bale Pulpers Sold This Year
(in the midst of the depression)

ALL SOLD ON APPROVAL—NOT ONE RETURNED

THE ANSWER? A big money saver—A real economy

Why use Beaters as Breakers for Dry Pulp?
Why use Waste Paper Breaker Beaters for Dry Pulp?

In either case it is poor economy and wasteful of power, labor, and space.
In one mill, using strong kraft, the Sturtevant Bale Pulper eliminated half the Beaters, reduced labor and maintenance, and improved treatment of stock to paper machine.
In two other mills ALL BEATERS WERE ELIMINATED.

With Sturtevant Bale Pulper, BEATING IS ACTUALLY STARTED and Roll can be let down as soon as Beater is filled.
No wasteful recirculation in large tubs—Just feed the Bales to the Bale Pulper, then straight line Saturation and Defiberation to Chest.

IN ONE MILL 90 K.W. HOURS SAVED PER TON OF STOCK TO PAPER MACHINE

Let us show you—see with your own eyes the economies which result from Bale Pulper operation. Don't forget, the Bale Pulper is not a shredder, it DEFIBERIZES, BRUSHES OUT, STARTS HYDRATION. It pays for itself quickly and surely.

STURTEVANT MILL CO. *HARRISON SQUARE* **BOSTON, MASS., U. S. A.**

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COMING EVENTS

AMERICAN PAPER AND PULP ASSOCIATION, Fifty-Seventh Annual Convention and Meeting, Waldorf-Astoria Hotel, New York, February 19-21.

Technical Association of the Pulp and Paper Industry, Convention, Waldorf-Astoria Hotel, New York, February 19-21.

Salesmen's Association of the Paper Industry, Annual Meeting, Waldorf-Astoria Hotel, New York, Tuesday, February 20.

New York Association of Dealers in Paper Mill Supplies, Annual Banquet, Hotel Commodore, Wednesday, February 21.

NATIONAL PAPER TRADE ASSOCIATION OF THE UNITED STATES, Convention, Waldorf-Astoria Hotel, New York, February, 19-21.

Canadian Pulp and Paper Association, Annual Meeting, Montreal, week of January 22.

Technical Section, Canadian Pulp and Paper Association, Annual Meeting, Montreal, January 24-25.

AN ANALYSIS OF THE NATIONAL LABOR BOARD'S THREE MONTHS CAREER

Three months of rulings by the National Labor Board have furnished sufficient data to indicate its policies and general methods of action in the settlement of labor disputes. On the basis of these rulings the National Association of Manufacturers has recently issued an analysis, marshalling the important decisions of the Labor Board under group headings so as to formulate, in some degree, its lines of thinking and the directions in which it is moving. It is recognized, of course, that much of the influence of the board is exerted informally, and that its published material by no means covers its work. On the other hand, what has been published forms a valuable and already rather formidable body of precedent for the newly established supreme court of labor.

The creation of the National Labor Board was not provided for in the National Industrial Recovery Act, although Senator Wagner, present head of the board, was one of the leading framers of the recovery act. The board was created by the President upon recommendation of the Industrial Advisory Board and the Labor Advisory Board. In a joint statement on August 5 of the two advisory boards the creation of a labor body was urged to "consider, adjust and settle differences and controversies that may arise through differing interpretations of the President's re-employment agreement.

At first, it was planned that the power of the board would be restricted to a purely consultative capacity, and that its decisions would be binding only if the parties in dispute agreed in advance to be bound by them. It was to act only as an official and always available court of arbitration. But the board quickly outgrew this limitation too. As a national emergency was declared to exist as pressing as any during war time, the dicta of the board were held as final as any of President Wilson's decisions on labor troubles during 1917 and 1918. The wording of the board's decisions immediately reflected this growth of authority, and assumed the tone of Supreme Court decisions. On September 28 Senator Wagner was saying that the board "cannot issue summonses, and it will not swing a club. It relies upon voluntary action." But a month later, on October 31, he declared that "to make its policies effective, the National Labor Board is backed by all the powers and penalties of the National Recovery Act. They will be used when necessary."

The senator's change of view followed the deed. Already, four days after its formation, the board announced that it had "assumed jurisdiction over the industrial disputes affecting the hosiery industry in Reading, Pa." Later, in the New York boot and shoe case, finding that mediation was unavailing, it dictated the terms of settlement and packed the strikers back to work. "The differences are too deep-seated to justify further attempts at mediation," reads the board's statement. "The National Labor Board, therefore, rules that the strike which has continued since August shall be terminated upon the following terms."

Throughout its brief career the Labor Board, though its decisions may have been arbitrary and occasionally conflicting, has consistently endeavored to further the President's purpose of getting as many men back to work as possible. In one case the board used the threat that unless picketing were ended it would not move to end a strike. "The committee will enter upon its duties (of investigating anthracite conditions) as soon as picketing is discontinued and those who have jobs and wish to work at them are permitted to do so without interference," the board announced by telegram on November 9. It has ordered the reinstatement of strikers in preference to strike breakers, and has included strikers in the election of worker representatives to deal with employers. Dismissal of an employee because of his activity in organizing has also been over-ruled by the board. It has been active in promoting and supervising the election of worker representatives.

In some instances the board's procedure has ridden rough-shod over private contracts. In the New York boot and shoe dispute the board held that "those of the alleged union contracts made since the inception of the strike, which have not resulted in the return of a majority of the

workers in any of the shops affected by the strike are invalid," although the contracts were made with an A. F. of L. union. In the Douglas Shoe Company dispute in Brockton, however, the board's decision that union workers vote "to ratify or annul the contracts alleged to be in force" met with resistance. J. J. Mara, president of the Boot and Shoe Workers Union, indicated that he would take legal steps to enjoin enforcement of the board's decision, charging that it interfered with a contract made annually for thirty years between Brockton employers and his union.

In certain important matters of interpretation, the board has taken a definite stand. Representatives *of* the workers need not necessarily be representatives chosen *from* the ranks of the workers, leaving the opportunity for professional organizers to deal with employers. But the board has recognized "merit" in the choice of an employee in the settlement of two strikes. The "open shop" principle has also been recognized. The board announced in the settlement of the bakery strike in Philadelphia that the agreement need not "contain any provision for a closed shop or for a contract with the union as such."

The analysis of the National Labor Board's decisions by the National Association of Manufacturers thus presents an interesting and important study of the career of one of the many agencies at work in the New Deal, and one which may continue to play a pivotal part in labor-employer relations.

To Reopen Warren Parchment Plant

DEXTER, N. Y., January 2, 1934.—Plans are under way for the re-opening of the former plant of the Warren Parchment Company here in the near future and improvements and alterations are now being made which will place it in good condition. The mill was acquired several weeks ago by a prominent concern after being idle for some time and its re-opening will mean considerable to local residents. Since its sale a crew of skilled mechanics have been working steadily to modernize it and it is understood that production will be under way within a short time. It is rumored now that John J. Warren, former president of the Warren Parchment Company, will become associated with the mill owners in an advisory capacity despite the fact that he has not been identified with paper mill interests since his retirement. For many years he was among the prominent paper mill men in Northern New York and in addition to his connections here was identified with the Harmon Paper Company, of Brownville, as president. The new ownership of the Parchment mill is headed by Harry Perlman who is a veteran paper mill man. Whether or not any equipment of the Brooklyn branch is to be moved here could not be learned. The productive capacity of the mill is not very large but it is understood that it will be sufficient to meet the needs of the new owners.

Swedish Newsprint Production

WASHINGTON, D. C., January 3, 1934—Swedish newsprint production during September reached a total of 20,082 metric tons, as against 22,864 tons in the preceding month and 16,568 tons during the corresponding month of 1932. Producton during the first nine months of 1933 totaled 180,383 tons against 177,409 tons during the corresponding nine months in 1932.

Leather Suction Box Tops

Castle & Overton, Inc., 200 Fifth Avenue, New York City, have obtained exclusive sales rights in this country for "Robalite" patented suction box tops made in Vienna, Austria. These tops are made from a specially processed hard and tough leather and are furnished in two designs, which are very simply attached to suction equipment regularly used, on Fourdrinier machines.

One design is known as the bar-type top, while the second is for boxes that require a perforated or slotted cover.

In the case of bars, leather strips (mounted to thin wood bases through special waterproof joints) are fastened into position by means of brass screws. The screw holes are countersunk into the wood bases to permit greatest possible wear of the leather strips before renewing.

The "Robalite" strips should be placed in cold water for twenty-four hours before installing.

Bases of specially hardened leather are used to mount the "Robalite" tops of perforated or slotted design in place of the thin wood strips of the bar type, waterproof cement being used for the mounting. The bases extend beyond and below the wire contact surface sufficiently on the sides and ends to contain countersinkings suitably spaced to take heads of fixing pins or screws. The tops, placed into position on the existing boxes being fitted, can be easily fastened by the brass pins or screws through the countersunk holes of the bases into the bodies of the boxes. It is recommended that these tops be placed in cold water for twenty-four hours before fixing, not being removed from the wooden boards used for packing during this wetting operation to prevent any bending of them.

Once these tops have been installed, either the bar or perforated types, they should be kept permanently wet.

The bar-type are furnished in sizes up to 2½ inches and are made in all widths to fit existing suction bars.

The perforated or slotted tops are always made to the exact length and width of the existing wooden top, and are furnished in standard thicknesses of approximately ½ inch and ¾ inch over all, giving ¼ inch and ½ inch "Robalite" wearing surface respectively.

Several advantages are claimed by users in Europe for this type of top. Among them are:

Life of wire prolonged 15-30 per cent.

Leveling rarely necessary with minimum loss of material (although it can be cut, drilled, planed or filed without difficulty) as leather is homogenous and not fibrous, and therefore wears evenly; that it is immeasurably superior to any material used heretofore for this purpose that is not harder than Fourdrinier wire.

Wire not liable to become damaged when striking edge of box.

Surface rendered more resilient and velvet-like giving steadier vacuum and consequent better formation of sheet.

Straw Board Company Registers

WASHINGTON, D. C., January 2, 1934—The Pacific Coast Pulp and Paper Corporation, Richvale, Cal., has filed a registration statement with the Federal Trade Commission under the Securities Act.

The statement shows that it is a Delaware corporation proposing to manufacture box board, paper and allied products from rice straw, issuing 4,508 shares of preferred stock at $100 per share, 4,508 shares of common stock at $25 per share, and 5,000 shares of bonus or promotion stock; aggregate, $563,500. The officers include, D. M. Thomson, president; A. J. Lofgren, secretary, both of Richvale, Cal., and Jessie L. Gladmon, treasurer, Oakland, Cal.

A drawing made at one of our plants by D. Douglass

Rosin Size

YOU get real service when you buy Rosin Size from American Cyanamid & Chemical Corporation. We operate six up-to-date Rosin Size plants, located, for the convenience of the paper industry, at Erie, Pa.—Waterbury, Conn.—Kalamazoo, Mich.—De Quincy, La.—Valdosta, Ga.—and Pensacola, Fla. Shipments reach you promptly via our own tank lines. In fact, you will find the service as excellent as the Rosin Size!

535 FIFTH AVENUE

AMERICAN CYANAMID & CHEMICAL CORPORATION

NEW YORK, N. Y.

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Amount of Coating of Mineral Coated Paper*

This method is suitable for the ordinary types of mineral coatings. It may not be effective for exceptional special types, such as where lacquers or other materials are used to impart a high degree of water resistance.

Reagent

Enzyme Solution. Aqueous solution of approximately 1.5 grams of enzyme and 25 cc. of 0.1 N NaOH per liter.

The enzyme recommended by Sutermeister and Porter *(1)* is trypsin, but some of the mixtures of enzymes used commercially for desizing cotton and degumming silk have been found to be more rapid in action, less expensive, and more stable. The preparation Degoma D. L. made by Röhm & Haas Co., 222 West Washington Square, Philadelphia, Pa., is particularly suitable.

Test Specimen

The specimen for test shall consist of not less than 25 square inches.

Procedure

Obtain the air-dry weight of the specimen. Place it in a suitable container in such a way that the enzyme solution will have free access to the entire surface of the coating. It may be laid in a flat-bottomed tray or rolled in cylindrical form and placed in a burette. Pour over the specimen sufficient enzyme solution to cover it completely. Allow to stand for at least 1 hour at 50° C., then place the paper on a pane of glass and brush off the coating with a camel's hair brush, taking care not to dislodge the paper fibers. Additional heating, and in some cases additional enzyme solution, may be found necessary for very resistant coatings.

After the coating is entirely removed, stand the glass pane at a slight angle and wash the paper on both sides by means of a wash bottle, holding the paper on the glass by one corner. Dry the specimen and obtain the air-dry weight. The difference between this weight and the original weight of the specimen is the amount of coating material. Not less than two determinations shall be made and the average of the results shall be reported.

Report

The amount of mineral coating shall be reported (1) as a percentage of the decoated air-dry paper and (2) as pounds per 500 sheets, 25 x 40 inches in size. The weight of the decoated air-dry paper, on this same weight basis, shall also be included in the report.

Precision

Owing to the variable nature of coating materials, the precision is variable. With most ordinary types of coatings, the percentage of coating material found should be correct to within 0.5 to 2.

Literature Cited

(1) Sutermeister and Porter, Tech. Assoc. Papers, XIII, No. 1, 205 (1930).

* This proposed revision of the official method of the Technical Association of the Pulp and Paper Industry has been approved by the Paper Testing Committee. Send suggestions and criticism to B. W. Scribner, Bureau of Standards, Washington, D. C.

TAPPI Notes

The headquarters of the Technical Association of the Pulp and Paper Industry was moved on January 1, 1934 to 122 East 42nd Street, New York.

Kenneth T. King, formerly in charge of paper sales at the Chicago office of E. I. du Pont de Nemours & Company, Inc. has recently been advanced to the position of manager of the Fine Chemical Division and is located in Wilmington, Del.

R. T. Bingham who has been a supervisor at the Citizens Conservation Camp in Vermont is now chemist with the Imperial Color and Paper Works, Glens Falls, N. Y.

Maurice Landsberg who recently graduated from the New York State College of Forestry is now with the Northern Paper Mills, Chicago, Ill.

H. G. Noyes formerly with the Wisconsin Vocational School, Appleton, Wis. is now personnel director of the Oxford Paper Company, Rumford, Maine.

D. K. Pattillock formerly with the Clinton Sales Company, Boston, Mass., has joined the sales staff of Stein, Hall Company, New York, N. Y.

Lawrence Gideon, a recent graduate from the New York State College of Forestry, is now a laboratory assistant with the Individual Drinking Cup Company, Easton, Pa.

Sven Hanson, formerly sulphite superintendent at Aug. Ekloef A/B., Tolkis, Finland, is now assistant technical manager of A. Ahlstrom O/Y, Kristianssand, Finland.

K. Maartman Moe, formerly superintendent of Risor Traemassefabriker, Risor, Norway, is now general manager of Hunsfos Fabriker A/S, Kristiandssand, Norway.

New Power House for Fort Howard

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., January 1, 1934—Work has been started by the Fort Howard Paper Company, Green Bay, Wis., on a new power house at the Green Bay mill. It will be 30 by 60 feet, one story, and of fireproof construction. New equipment has been ordered, to be installed at an early date. The contract has been let to Selmer & Co., Green Bay, Wis., and the engineers are W. L. Fergus & Co., Chicago.

The Rate of Drying of News Print*

By F. W. Adams[1]

Abstract

The equations of Montgomery for drying rates of kraft paper have been extended to apply to the drying of news print. It has been shown that production and evaporation rates in drying news print increase with steam temperature. These rates are considerably greater than those for kraft and board.

Drier performance is a subject of considerable interest to the operating superintendent in the paper mill, because it affects directly machine production and production cost. Every mill keeps a close watch on these items, but the effect of drier performance is often overlooked because of a lack of accurate standards for comparison which will tell the superintendent or engineer whether the drying rate on any of his machines constitutes good, average or poor practice. During the last two years data have been assembled and published correlating drying rates for board and kraft. This report covers the progress of your committee in determining drying practice in the production of news print.

The data presented here were supplied by various news mills in reply to a questionnaire circulated by the committee. News print offers a distinct advantage in a study of this kind because of its uniform basis weight. The results presented are based largely on standard news, although a few data on the drying of book, catalog and hanging of basis weights (24x36—500) between 28 and 40 pounds are included. A variety of machine conditions is represented in the information at hand. Machine speeds vary between 477 and 1250 feet per minute on machines of widths between 84 and 232 inches. Many types of ventilation with and without hoods are included, some with felt driers and special air systems for aiding drying and some without either. On some machines two sets of data were collected illustrating both the best performance of the machine and its performance on the paper which is hardest to dry.

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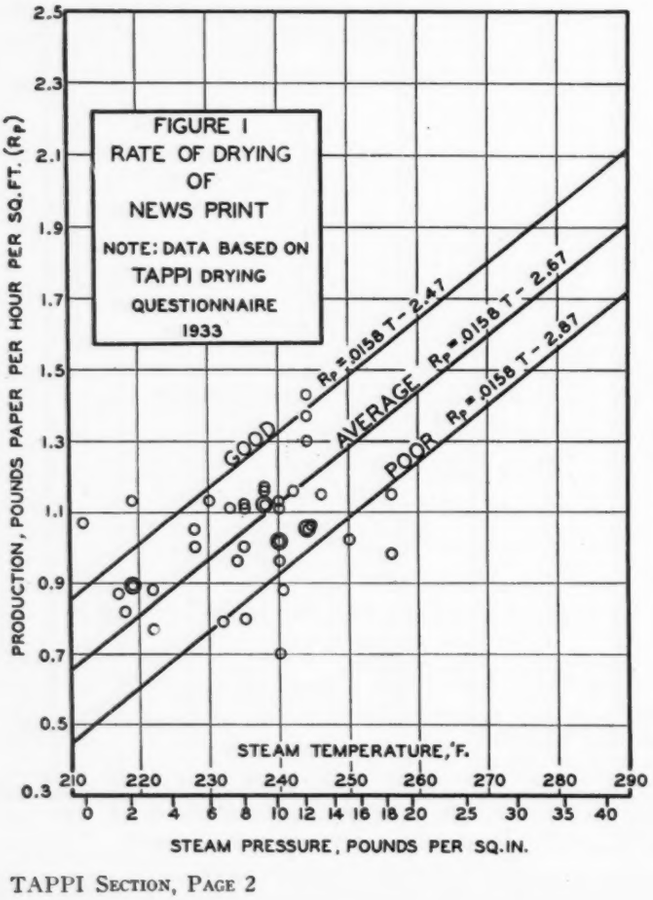
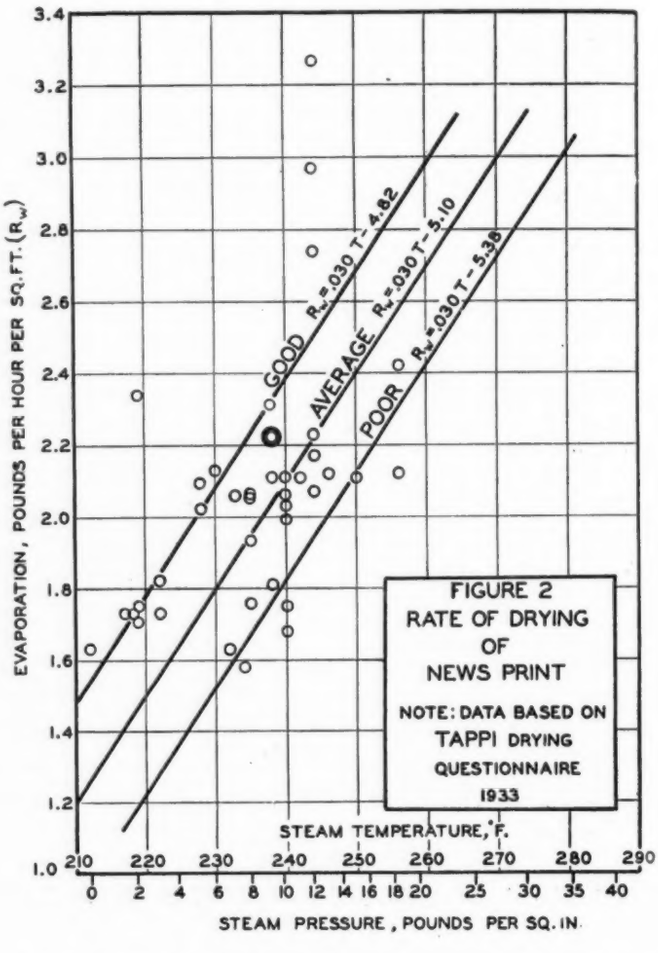
* To be presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 19-22, 1934.
[1] Member TAPPI, asst. professor, Dept. of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, Mass.





Method of Calculation

To facilitate interpretation, the results have been calculated to the basis of a square foot of drier surface. While the area of drier surface in contact with the paper may be used, this calculation is simplified and probably of greater value if the total circumference of all the heated paper drier and felt drier rolls be taken to determine the area of drier surface per inch of width. This method automatically eliminates any errors which might be introduced if width of trim were involved. Knowing machine speed and basis weight the production of paper per square foot of drier surface is calculated. This quantity will be designated "production" throughout the remainder of this report. Production multiplied by the moisture removal per

pound of paper yields the evaporation of water per square foot of drier surface, designated as "evaporation." These calculations may be represented by the following simple formulas.

1. The total drying surface as square feet per inch of width,

$$\frac{s}{w} = 0.0218\ (N_P D_P + N_F D_F)$$

where N_P and D_P represent respectively the number and diameter of heated paper dryers and N_F and D_F represent respectively the number and diameter of the felt dryers, drier diameters expressed in inches.

2. The production expressed as pounds of paper produced per hour per square foot of drier surface,

$$\text{Production} = \frac{\text{Speed} \times \text{Weight}}{s/w \times 600}$$

where: Speed = Machine speed in feet per minute
Weight = Basis weight—24x36—500.

3. The water evaporated per pound of paper dried,

$$W = \frac{A - B}{100 - A}$$

where A = per cent moisture content of the sheet entering the driers
B = per cent moisture content of the sheet leaving the driers

4. The evaporation expressed as pounds of water evaporated per hour per square foot of drier surface,

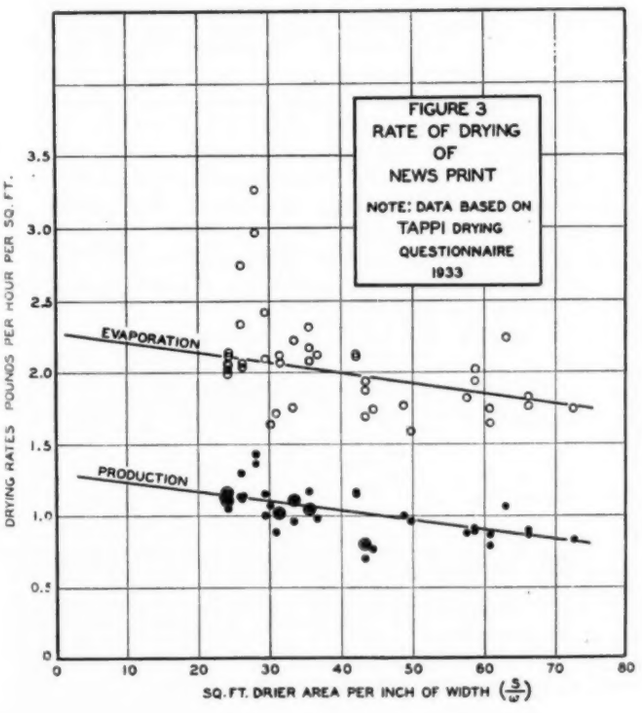
$$\text{Evaporation} = \text{Production} \times W$$

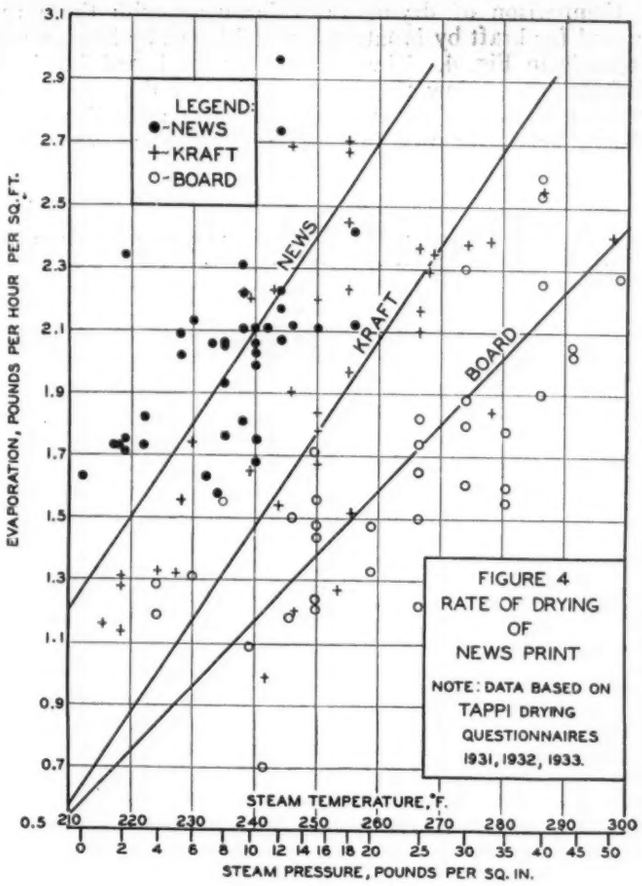
Discussion of Results

The effect of steam pressure and temperature on production is shown in Fig. 1. An arbitrary series of parallel lines has been drawn through these points representing good, average and poor operation. Their slope has been chosen equal to the slope of similar lines which Montgomery *(1)* found apply to the drying of kraft. Although the points are scattered rather widely, they do indicate a definite increase in production as steam temperature is increased.

Evaporation is also affected by steam temperature as illustrated in Fig. 2. Here again the slope of the parallel lines was chosen equal to the slope of the lines drawn by Montgomery *(1)* for drying kraft. The correlation of steam temperature with evaporation is better than with production. Steam temperature is unquestionably the greatest single factor affecting drying rates.

The effect of other variables on drying rate is much less marked. Production is found to decrease as the "length" of the machine increases. "Length" has been expressed as square feet of covered dryer area per inch of width. Fig. 3 shows how production falls off on the longer machines. A similar effect is noticed when evaporation is compared with machine "length." Since the effect of steam temperature on evaporation is large it might be thought that an evaporation corrected to a constant steam temperature on the basis of the curves (Fig. 2) would facilitate analysis of the effect of minor variables on production and evaporation. If production and evaporation are corrected in this manner, the results indicate no change in either as machine length is increased. This makes it appear likely that the effects noticed in Fig. 3 are the result of an economic balance between steam pressure and machine length which appears to affect drying capacity. Machine speed is found to have no noticeable influence on production or evaporation either directly or when they are corrected to a constant steam temperature.





In an effort to study the effect of cleanliness of drier surface, drainage conditions in the driers, hoods and special ventilating systems for the machine room and felts, felt drier rolls, and hydration of the stock, information concerning these variables was collected. Many of these variables are not susceptible of measurement and hence are subject to the opinion of the superintendent without relation to the other opinions gathered. While the effect of one of these variables on evaporation may explain outstanding good or poor operation in occasional cases, there was no grouping of tests allowing any generalization. A possible exception to this statement occurs where evaporation rates higher than 2.15 pounds per hour per square foot are obtained. Out of six mills reporting in this range, all but one are equipped with some special air system.

Comparison of drying rates for news with those reported for kraft by Montgomery and board by Stamm *(2)* is made in Fig. 4. The light circles for board fall in a definite zone below the others, while the dots for news show a high rate of evaporation. The rates for kraft shown by the crosses fall between the other two. For convenience the average line for each classification has been included.

Literature Cited

(1) Montgomery, A. E., Paper Trade J. 96, No. 11, 32-5 (1933). Tech. Assoc. Papers, XVI, 1933.
(2) Stamm, F. C., Paper Trade J. 94, No. 17:42-4 (T.S. 227-9) April 28, 1932. Tech. Assoc. Papers, XV, 208-10, 1932.

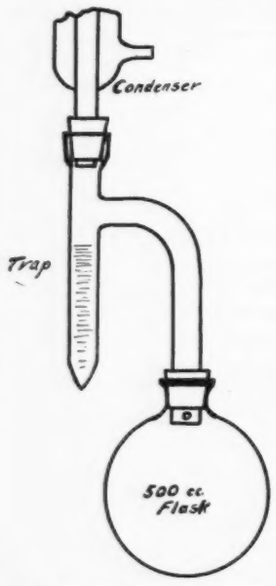
A Rapid Method for the Determination of Moisture and Consistency of Insulating Board Pulp

By Lionel K. Arnold[1]

In the manufacture of insulating board it is desirable to be able to determine the moisture content of the pulp and the board at various stages in the process by some method more rapid than the usual method of drying to constant weight. The method of determining moisture by refluxing the wet material with xylene which has been applied by Youtz and Laner *(1)* to the determination of moisture in lapped paper pulp has been applied in this laboratory to the determination of moisture in cornstalk insulating board pulp at different stages in the process.

Procedure

The method of procedure is as follows: A Dean-Stark water determination apparatus (A.S.T.M. Test D95-28) consisting of a 500 cc. balloon flask, a special glass trap, and a 400 mm. condenser was set up as shown in the figure. One hundred cubic centimeters of xylene are placed in the flask together with 10 grams of the material in which the moisture is to be determined. When the xylene is boiled the xylene and water vapors pass up the condenser where they are condensed and run back into the trap. Being immiscible they separate into two layers with the lighter xylene on top, any excess of the xylene running back into the flask. The amount of water is read directly from the graduations on the tube. Before reading, the tube should be immersed in water to bring it to 20 deg. C. if an accurate reading is desired. It may also be desirable to provide a drying tube at the upper end of the condenser to prevent moisture from the air affecting the results.



Determination of Moisture in the Board Mat and the Finished Board

The mat of board going from the press rolls to the drier varies from 70 to 80 per cent moisture. A series of determinations on the wet mat using both the xylene method and the conventional method of drying to constant weight show close agreement.

When determining the moisture of the dry board it was necessary to use a 20-gram sample to secure a satisfactory reading on the standard Dean-Stark trap. With a Didwell-Sterling trap the 10-gram sample may be used. Typical values for both the wet mat and dry board are given in the table.

MOISTURE DATA BY THE XYLOL METHOD

No.	Material	Moisture Content, Per cent: By usual drying method	By Xylene method
1	Wet board	76.7	77.0
2	Wet board	80.6	80.5
3	Wet board	78.0	78.0
4	Wet board	75.0	75.0
5	Dry board	4.64	4.63
6	Dry board	4.53	4.50
7	Dry board	4.50	4.45
8	Dry board	4.45	1.50

The xylene method has the advantage of requiring only 20 to 30 minutes above the time required for weighing the samples.

Determination of Consistency

The refined and sized cornstalk insulating board pulp goes to the forming machine at a consistency of 2.5 to 4.0 per cent, the exact consistency depending upon the freeness of the pulp, the speed of the forming machine, and the final board thickness. It is desirable to be able to control the consistency because of its effect on the process and as one of the factors in the calculation of freeness. The following method has been found to give very good results in determining consistency: One kilogram of the pulp suspension is filtered on a Büchner funnel until the water drops slowly from the funnel. The exact point is not critical as long as the moisture remaining with the pulp is well distributed through the filter cake. The filter cake is weighed and a 10-gram sample taken on which the moisture is determined by the xylene method. The per cent consistency is equal numerically to one-tenth of the dry weight of the filter cake.

Literature Cited

(1) Youtz, M. A. and Lauer, B. E. The Determination of Moisture in Wood and Lap Pulp. Paper Trade J. 93, No. 16, 31-2 (Oct. 15, 1931).

RECEIVED November 6, 1933.
[1] Assoc. chemical engineer, Engineering Experiment Station, Iowa State College, Ames, Iowa.

F. W. Young Joins Oliver United Filters

F. W. Young, formerly of Filtration Engineers, Inc., and more recently of The Pulp Filter Company, has joined the sales organization of Oliver United Filters, Inc., New York, Chicago, San Francisco and Toronto.

The Analysis of Paper Ash Containing Titanium Pigments

By J. M. Jarmus[1] and W. R. Willets[2]

Abstract

The following apparatus and procedure deal with the analysis of paper ash as modified by the presence of titanium pigments, i.e., pure titanium dioxide, titanium dioxide—barium sulphate composite (Titanox-B) and titanium dioxide—calcium sulphate composite (Titanox-C).

Apparatus

The only special apparatus required is the Jones reductor, illustrated in Fig. 1. It consists of a dispensing burette (Fig. 1) about 66 cm. (21 inches) long and 5 cm. (2 inches) in diameter, equipped with a glass stop cock and delivery tube about 6 mm. (¼ inch) in diameter by 9 cm. (3½ inches) long.

The reductor is charged with an 18 cm. (7 inch) column of 20 mesh and 10 mesh amalgamated zinc (500 grams each), and on top of this a 13 cm. (5 inch) column of broken amalgamated zinc (about 500 grams). The delivery tube is connected to a one liter flask through a three-hole rubber stopper. One hole is used as an inlet and the other as an outlet for carbon dioxide gas.

The zinc is amalgamated by immersing it in a solution of mercury bichloride in hydrochloric acid. 11 grams of mercuric chloride are dissolved in 100 cc. of concentrated hydrochloric acid. 250 grams of zinc are covered with distilled water in a one liter suction flask and the mercuric chloride solution is poured in with slow mixing and shaking for about 2 minutes. The solution is poured off and the zinc washed thoroughly, first with hot tap water and finally with distilled water.

Reagents

(1) *0.1N potassium permanganate solution* standardized against U. S. Bureau of Standards sodium oxalate.

(2) *Standard ferric ammonium sulphate solution,* of which 1 cc. is equivalent to 0.005 grams of titanium dioxide, standardized by reduction and titration with 0.1N potassium permanganate, which has been standardized against Bureau of Standards sodium oxalate.

(The ferric ammonium sulfate is prepared by dissolving 30 grams of the salt in 300 cc. of distilled water acidified with 10 cc. of sulphuric acid. Potassium permanganate solution is added drop by drop as long as the pink color disappears. The solution is finally diluted to one liter. In standardizing, 50 cc. of the solution is made up to about 100 cc. in 5 per cent sulphuric acid, reduced in the Jones reductor and titrated against standard 0.1N potassium permanganate.)

(3) *Indicator.* A saturated solution of ammonium thiocyanate is used as an indicator.

Procedure

a. Qualitative:

The qualitative analysis of fillers and ash for the commoner loading materials, such as clay (hydrated aluminum silicate), talc (hydrated magnesium silicate), barium sulphate, barium carbonate, calcium sulphate, and calcium carbonate, are well known and therefore will not be described here. They are included in the T.A.P.P.I. Standards *(3)*.

Hydrogen peroxide when added to a titanium solution in sulphuric acid gives a yellow to orange red color depending on the concentration of titanium. The test is very delicate, a slight color being noted with only 0.0003 grams of titanium dioxide in 100 cc. of solution. Solutions deficient in acid do not show the maximum development of color and it is therefore necessary to have 5 cc. of sulphuric acid (specific gravity 1.84) present for every 100 cc. of solution.

A qualitative analysis of the ash should be made unless the nature of the loading material is known, since it will greatly facilitate the quantitative analysis.

A more detailed qualitative procedure is given by W. M. Thornton *(4)*.

b. Quantitative:

The analysis for titanium involves its reduction and titration with a ferric salt *(2)*. The details of the procedure depend upon the other materials present. The general procedure for the determination of titanium dioxide is

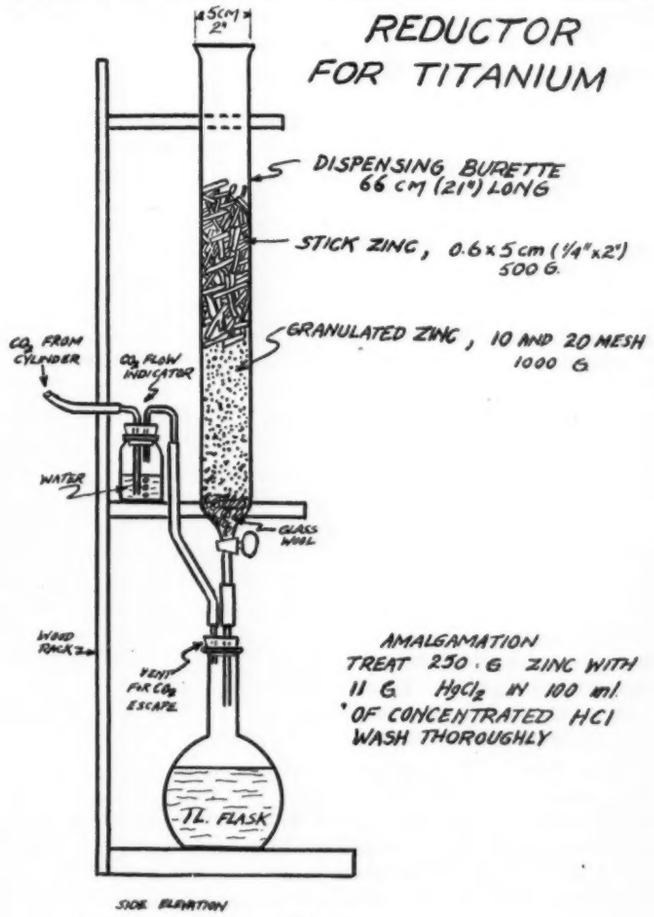

REDUCTOR FOR TITANIUM
5CM 2"
DISPENSING BURETTE 66 CM (21") LONG
STICK ZINC, 0.6 x 5 cm (¼" x 2") 500 G.
GRANULATED ZINC, 10 AND 20 MESH 1000 G
CO2 FROM CYLINDER
CO2 FLOW INDICATOR
WATER
GLASS WOOL
WOOD RACK
VENT FOR CO2 ESCAPE
TL. FLASK
AMALGAMATION
TREAT 250 G ZINC WITH 11 G. HgCl2 IN 100 ml OF CONCENTRATED HCl
WASH THOROUGHLY
SIDE ELEVATION

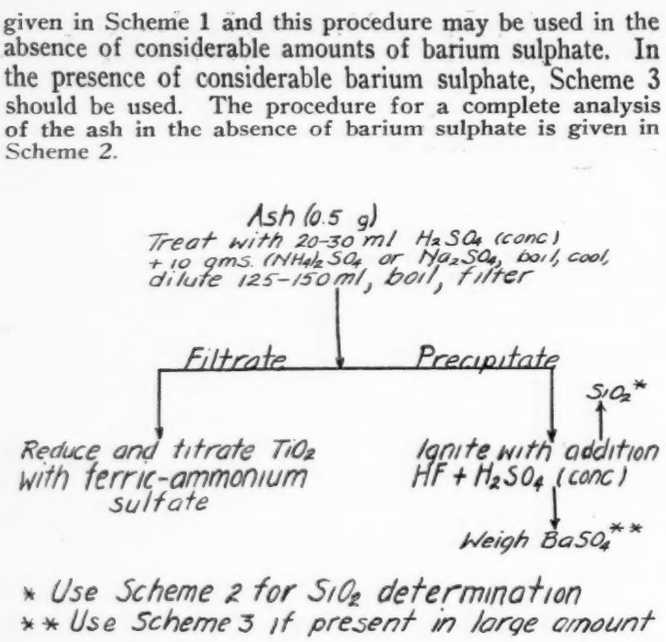
FIG. 1.

RECEIVED October 6, 1933.

[1] Chemist, Titanium Pigment Company Research Laboratory, 105 York Street, Brooklyn, New York.

[2] Member TAPPI, paper chemist, Titanium Pigment Company, 111 Broadway, New York City.

given in Scheme 1 and this procedure may be used in the absence of considerable amounts of barium sulphate. In the presence of considerable barium sulphate, Scheme 3 should be used. The procedure for a complete analysis of the ash in the absence of barium sulphate is given in Scheme 2.


Ash (0.5 g)
Treat with 20-30 ml H_2SO_4 (conc)
+10 gms. $(NH_4)_2SO_4$ or Na_2SO_4, boil, cool,
dilute 125-150 ml, boil, filter
Filtrate
Precipitate
SiO_2*
Reduce and titrate TiO_2 with ferric-ammonium sulfate
Ignite with addition $HF + H_2SO_4$ (conc)
Weigh $BaSO_4$**
* Use Scheme 2 for SiO_2 determination
** Use Scheme 3 if present in large amount

SCHEME 1.
Analysis for Titanium Dioxide in the absence of large amounts of Barium Sulphate.

A sample of ash which should not contain more than 0.25 grams titanium dioxide is weighed out accurately. Usually 0.5 grams of the ash is weighed into a 250 cc. beaker and 20-30 cc. sulphuric acid and 10 grams of ammonium or sodium sulphate are added. The beaker is covered with a watch glass and the contents are carefully boiled over a flame until dissolved (siliceous material remains undissolved). After cooling, the contents are diluted with distilled water to a volume of about 125-150 cc. A white precipitate may form, indicating barium sulphate. The solution is boiled gently and if it contains a precipitate is filtered and the precipitate washed with hot 5 per cent sulphuric acid and finally with hot water until free from titanium, indicated by testing with 3 per cent hydrogen peroxide solution, which gives a yellow color with the washings if titanium oxide is present.

(Instead of dissolving the ash with concentrated sulphuric acid it may be fused with sodium carbonate. 0.5 gram of the ash is fused with 5-10 grams dry sodium carbonate in a covered platinum crucible over a Meker burner. The melt is dissolved with 20-25 cc. of concentrated sulphuric acid in about 125 cc. water. It is then boiled and filtered to remove any barium sulphate and other insoluble matter. The precipitate is washed free of titanium with hot 5 per cent sulphuric acid followed by hot water.)

The precipitate, if small, is dried and ignited in a tared platinum crucible, cooled in a desiccator and weighed. The ignited residue is treated with about 5-10 cc. hydrofluoric acid and 4 drops concentrated sulphuric acid, evaporated to dryness on a hot plate and finally ignited to constant weight. The loss in weight represents silica (SiO_2). The residue is weighed as barium sulphate.

The filtrate and washings having a volume of about 250 cc. are reduced and titrated as follows:

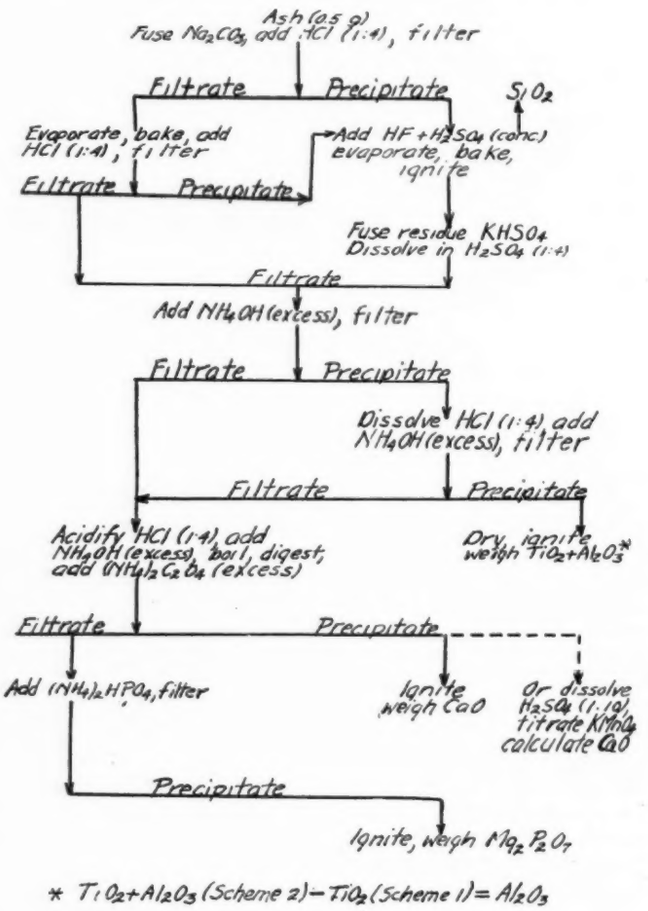
Procedure: The reductor is drained to the top of the **fine mesh zinc and 200 cc. of a** boiling solution of sulphuric acid (5 per cent) are added. The reductor is slowly drained and then washed at least four times with boiling water. The reductor is drained to the top of the fine mesh zinc, and the hot titanium solution is washed into it and allowed to remain from 15 to 20 minutes. The reductor is kept covered with a watch glass during the period of reduction. During the whole period of reduction a slow stream of carbon dioxide is passed through the receiving flask. The reductor is slowly drained into the receiving flask while carbon dioxide is continuously passed through the flask. When the solution has reached the level of the fine mesh zinc a boiling 5 per cent solution of sulphuric acid is added and the level of the solution brought to the top of the stick zinc. The reductor is drained to the fine mesh zinc, then washed in the same manner as above, with boiling water, four times. The flask is removed and 7 cc. of the indicator are added and the solution is titrated rapidly with the standard ferric ammonium sulphate solution.

Cc ferric ammonium sulphate × factor = grams TiO_2.

(Note 1: In titrating the titanium solution with ferric ammonium sulphate, the greatest accuracy is obtained by adding nearly all of the ferric ammonium sulphate before agitating; then agitating by shaking with a gentle rotary motion which is continued until the final end point, a light straw color.

Note 2: When not in use the Jones reductor should be kept filled with water and covered to exclude dust and other extraneous matter.

Note 3: Before using the reductor a blank run should be made using the same concentration of sulphuric acid in water and the identical procedure as used for the titanium determination, the reduced solution being titrated. This blank should not require more than 0.1 cc of the standard ferric ammonium sulphate solution. If more is needed, the zinc should be reamalgamated or another lot of ferric alum used.)



SCHEME 2.
Analysis for Silica, Alumina plus Titanium Dioxide, Calcium and Magnesium. (Titanium Dioxide in mixture with Clay, Talc, Chalk or Calcium Sulphate.)

SILICA

0.5 gram of ash is fused with 5-10 grams of sodium carbonate in a covered platinum crucible over a Meker burner. The melt is dissolved in about 125 cc. diluted hydrochloric acid (1:4), filtered, and washed with hot water. The residue is ignited in a tared platinum crucible, cooled

in a desiccator and weighed. The ignited and weighed residue is treated with about 5-10 cc. hydrofluoric acid and 3-4 drops concentrated sulphuric acid, evaporated to dryness on a hot plate and finally ignited to constant weight. The loss in weight represents silica (SiO_2). The filtrate from the melt is evaporated to dryness and baked on the hot plate for about one-half hour to insure complete dehydration of the silica. The residue is taken up with warm hydrochloric acid (1:4), filtered, and washed with water. The residue is dried, ignited and weighed in a tared platinum crucible. The ignited and weighed residue is treated with 5-10 cc. hydrofluoric acid and 3-4 drops concentrated sulphuric acid, evaporated to dryness on a hot plate and finally ignited to constant weight. The loss in weight represents silica (SiO_2). This result is combined with the result obtained from the residue of the fusion to give the silica content.

If residues are present after the silica has been removed, they are fused with potassium bisulphate. The melt is dissolved in dilute sulphuric acid (1:4) and added to the filtrate from the silica determination.

(Note 4: It is advisable to treat the silica residue with hydrofluoric and sulphuric acids more than once if the amount of silica is large.)

Titanium Dioxide and Alumina

A slight excess of ammonia is added to the combined filtrates and washings from the silica determination, the solution boiled, filtered, and the precipitate washed with 5 per cent ammonia. The precipitate is redissolved in the original beaker with hydrochloric acid (1:1) and reprecipitated with ammonia, filtered (through the original filter), and washed, the washings being combined with the first filtrate and washings. The residue is dried, ignited to constant weight and weighed as alumina plus titanium oxide. Subtracting the titanium dioxide as determined in Scheme 1 gives the alumina.

$$TiO_2 + Al_2O_3 \text{ (Scheme 2)} - TiO_2 \text{ (Scheme 1)} = Al_2O_3$$

(Note 5: Even if alumina is not present a double precipitation is still necessary to insure complete separation of titanium oxide, since the gelatinous precipitate tends to absorb appreciable amounts of calcium, magnesium, etc. In this case the precipitate may be dried, ignited and weighed as titanium dioxide.)

Calcium

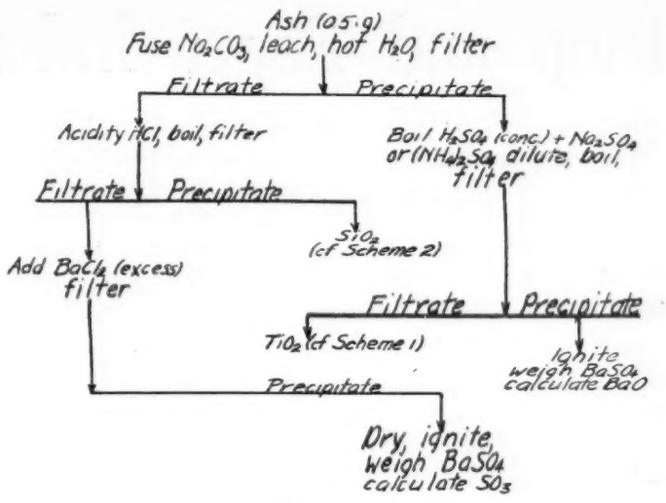
The combined filtrates from the titanium dioxide and alumina separation are slightly acidified with hydrochloric acid and the volume is adjusted to 150-200 cc. This solution is then made alkaline with ammonia and brought to a boil. An excess of ammonium oxalate solution is added. The solution is boiled gently for about 2 minutes, digested on a steam bath for one hour and allowed to cool to room temperature. The precipitate is then filtered, washed with hot water, dried, ignited and weighed as CaO. The calcium oxalate may also be washed free of oxalates, dissolved in dilute sulphuric acid (1:10), heated to 70 deg. C. and titrated with standard potassium permanganate solution.

$$CaO \times 2.4280 = CaSO_4$$

Magnesium

The volume of the filtrate from the calcium separation is adjusted to 150-200 cc. The solution should contain 5-10 per cent ammonium hydroxide by volume. Diammonium phosphate is added with constant stirring, and the solution allowed to stand for at least 4 hours; if possible it is best to let it stand overnight. The precipitate is filtered, washed, dried and ignited, slowly at first and finally over a Meker burner, until the weight is constant, cooled in a desiccator and weighed as magnesium pyrophosphate.

$$Mg_2P_2O_7 \times 0.3621 = MgO$$



Scheme 3.
Analysis for Sulphates, Barium and Titanium Oxide. (Titanox-B or mixtures of Titanium Dioxide and Barium Sulphate.)

Sulphates

About 0.5 g. of ash is fused with 5-10 grams of sodium carbonate in a covered platinum crucible. The fusion is treated with hot water until the melt is completely disintegrated, filtered and washed with hot 5 per cent solution of sodium carbonate. The filtrate and washings are acidified with hydrochloric acid and boiled to expel carbon dioxide (removing silica if present). An excess of barium chloride solution is added and the solution allowed to stand overnight. It is then filtered and the precipitate washed free of chlorides. The residue is dried, ignited to constant weight and weighed as barium sulphate ($BaSO_4$).

$$BaSO_4 \times 0.343 = SO_3$$

Barium

The residue from the water extraction of the sodium carbonate fusion (sulphate determination) is dissolved by boiling in 20-30 cc. concentrated sulphuric acid and 10 grams ammonium sulphate or sodium sulphate. After cooling, the contents are diluted with distilled water to a volume of about 125-150 cc. and boiled. The barium sulphate is filtered, washed with hot 5 per cent sulphuric acid and finally with hot water until the washings are free from titanium as detected by the hydrogen peroxide test. The barium sulphate is dried, ignited and weighed.

$$BaSO_4 \times 0.657 = BaO$$

Titanium Dioxide

The filtrate and washings from the barium separation are evaporated to a volume of 200-250 cc., heated to boiling, reduced and titrated as described above.

This determination for titanium dioxide is unnecessary if it has already been determined under Scheme 1. It may, however, be used as a check.

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(2) Scott, W. W.: "Standard Methods of Chemical Analysis." 4th ed., I, page 544-a. D. Van Nostrand Company, New York.
(3) TAPPI Standards T421m and T422m. Tech. Assoc. Pulp and Paper Industry, New York.
(4) Wm. Thornton: "Titanium". (Amer. Chem. Soc. Monograph No. 33).

Dispatch Onion Skin

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Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Beating

Improvements in Methods of Defibering Wood and the Like. Arne J. A. Asplund. Fr. pat. 737,037.—Wood in chips is heated for a short time (generally about 20 to 40 sec.) at 120 deg. to 182 deg. C. (best results are obtained at 161 deg. to 171 deg. C. with soft woods and 137 deg. to 149 deg. C. for hard woods) so as to soften the middle lamella, and is then immediately disintegrated at substantially the same temperature as it was heated, preferably in a machine of the hammer-mill type and in presence of as little water as possible.—A. P.-C.

Breaker Beater. Robert J. C. Frey. Fr. pat. 737,139 (March 4, 1932).—The essential feature of the invention lies in the fact that continuous extraction of sufficiently reduced material is effected under hydraulic pressure and under the agitating action of the beater roll.—A. P.-C.

Disintegrating Machine for Paper Pulp. W. C. Fraser. Brit. pat. 364,422 (March 9, 1931).—The machine consists of a conical shell in which is located a shaft provided with rotating arms or paddles and an endless conveyor located adjacent to or inside the feeding hopper so that the feed of material into the machine is continuous. Tubes are provided on the shaft between the arms to prevent accumulation of pulp.—A. P.-C.

An Agitated Stock Chest. W. L. Ketchen. Pulp Paper Can. 34: 235 (March, 1933).—A description of a stock chest that will continuously and properly agitate bleached or unbleached sulphite, and at the same time will successfully blend stock at densities that will allow it to be pumped with the usual type of centrifugal open-impeller pump.—A. P.-C.

Reducing Beater Room Costs. Lawrence H. Jacobson. Paper Trade J. 96, No. 10: 25-26 (March 9, 1933).—A description of the new beater room of the Northwest Paper Co.'s plant, Cloquet, Minn.—A. P.-C.

Fibrous Product and Manufacture of Same. Roland B. Respess assignor to Respats, Inc. U. S. pat. 1,899,985 (March 7, 1933).—Wood is disintegrated mechanically in presence of material such as sand in a machine of the type described in Respess' U. S. pat. 1,770,430, of July 15, 1930, treatment being conducted in such a manner that fine particles of sand remain embedded in the fibers. Part or all of the sand may be either left with the disintegrated wood or removed therefrom, and the material is used for the production either of building boards or of light fiber-cement compositions.—A. P.-C.

Continuous Process of Reducing or Reforming Wood or Other Fibrous Material. Roland B. Respess assignor to Respats, Inc. U. S. pat. 1,897,620 (Feb. 14, 1933).—Chipped or shredded wood, in a moist condition but containing no free water, is treated mechanically (preferably in a kollergang or like machine). It passes to an air separator in which it is selectively graded, the portion which has been sufficiently reduced passing directly to a storage or hydrating tank and the remaining portion passing to a second reducing mechanism.—A. P.-C.

Paper Stuff Hydrator. Harold D. Wells. U. S. pat. 1, 897,157 (Feb. 14, 1933).—A suitable number of outer roller races are mounted in sliding but non-rotating contact with the smoother inner wall of a horizontal cylindrical casing. Corresponding inner roller races are mounted to rotate with a shaft mounted at the axis of the casing. The races are spaced apart to provide a more or less tortuous channel through which the stock must flow; and in the channel are placed a number of annular series of rollers of appropriate shape.—A. P.-C.

Beater Bed Plate. Albert J. Allison assignor to Simonds Worden White Co. U. S. Pat. 1,886,861 (Nov. 8, 1932).—The bed plate knives are corrugated and are set diagonally instead of parallel to the axis of the roll. This arrangement is claimed to increase the circulation of stock and at the same time to reduce power consumption. —A. P.-C.

Two-Stage Continuous Batch Beating and Automatic Beater Room Operation. C. W. Morden. Paper Trade J. 96, No. 21: 39-41 (May 25, 1933).—The Morden "stock-maker" is now constructed as a 2-stage unit, which may be operated either 2-stage or single-stage or as a combination of both. Its advantages are brought out.—A. P.-C.

Bleaching

Process of Bleaching Pulp. Emil Ekeberg. U. S. pat. 1,887,587 (Nov. 15, 1932).—A continuous stream of pulp is mixed with a continuous stream of bleaching liquor, and the mixture is continuously discharged into a support such as a turntable or belt which is continuously passed to deliver the mixture of pulp and bleaching liquor to a point of discharge. An apparatus is specified.—A. P.-C.

Bleaching Wood Pulp. Erich Kayser assignor to I. G. Farbenindustrie A. G. U. S. pat. 1,887,412 (Nov. 8, 1932).—The raw material is treated in the form of a paste-board sheet and in countercurrent, with bleaching solutions of successively increasing concentration of available chlorine at temperatures varying inversely to the chlorine content of the bleaching solutions.—A. P.-C.

Bleaching Pulp. Horatio A. Helder assignor to The Champion Fibre Co. U. S. pat. 1,890,179 (Dec. 6, 1932).—Pulp obtained by the digestion of raw fibrous material such as wood is refined and hydrated substantially to the condition suitable, except for color, for use directly on the paper machine, and the pulp is then bleached.—A. P.-C.

Bleaching Pulp. C. B. Thorne. Fr. pats. 739,909 and 739,910 (July 12, 1932).—*No. 739,909*—Pulp is bleached by passing it in a current of low consistency and mixed with a bleaching agent down a long inclined conduit in a shallow stream. The treatment at low consistency may be preceded by a treatment at high consistency. An apparatus is described. *No. 739,910*—Pulp is bleached in two or more stages, the first, at least, of which is at low consistency. The pulp is mixed with the bleaching agent and passed in a continuous manner through two vessels, the first, at least, of which plays the part of an absorption zone and allows, by appropriate means, the duration of the absorption to be adapted to the nature of the pulp or the use to which it is to be put.—A. P.-C.

The Theory of Bleaching. James Strachan. Paper Maker & Brit. Paper Trade J. 85: TS257-258 (Sept. 1, 1933).—A brief discussion of the mechanism of the bleaching of pulp, which is considered to consist to a limited extent in oxidation of lignin compounds but mainly in simultaneous chlorination and solution of the lignin. —A. P.-C.

Concerning the Chlorine Consumption in the Bleaching of Sulphite Pulp. Arne Waller. Papier-Fabr. 31, No. 18: 269-272 (April 30, 1933).—The author divides the chlorine consumption into four main groups as follows; (1) the dissolving out of the incrustants, (2) the oxidation of these incrustants, (3) evaporation, chlorate formation, etc., (4) attacking the cellulose. Each of these groups are discussed in detail, the methods used for the investigation, the results and the interpretation of the results.—J. F. O.

Process for Bleaching Fibrous Materials from Plants, Especially Wood Pulp. I. G. Farbenindustrie Akt. Ges., Frankfurt a.M. Ger. pat. 507,018 (March 2, 1928).—The invention concerns a process in which the fibrous material meets a solution of bleach of increasing concentration of active chlorine in a counter current system. The temperature is such that it is highest with the weakest bleach liquor, that is temperatures of 25 to 35 deg. C. and lowest (15 to 25 deg. C.) with the strongest bleach.—J. F. O.

Process for the Purification of Pulp. Deutsche Gold und Silber Scheideanstalt, Frankfurt a.M. Nor. pat. 52,-072 (Aug. 30, 1930).—After a chlorine treatment and a following alkali treatment at higher temperatures, the material is bleached with an agent containing active oxygen, for example, sodium peroxide, with or without the addition of oxygen from the air.—J. F. O.

Process for the Bleaching of Pulp in Several Stages. C. A. Geijer, Skoghall. Swed. pat. 76,626 (Aug. 22, 1927).—After a pre-bleaching, but before the final bleaching, the partially bleached stock passes through a de-watering apparatus and separator and lastly a knotter, a sand catcher and a de-watering apparatus in the order mentioned.—J. F. O.

Process for the Preparation of a Bleaching Liquid with Calcium Hypochlorite as the Main Constituent. Solvay & Co., Brussells, Belgium. Finn. pat. 14,791 (July 12, 1931).—Gaseous chlorine is allowed to act on a circulating solution of milk of lime through a line. Before the chlorine is allowed to react a large quantity of finished hypochlorite solution is used to dilute the milk of lime, and this addition of finished hypochlorite is continued as needed throughout the process.—J. F. O.

Technology of the Preparation of Bleach Liquor from Liquid Chlorine and Calcium Oxide. Otto Wurz. Papier-Fabr. 31, No. 5: 49-53; No. 6: 62-65 (Jan. 29, Feb. 5, 1933).—A detailed description of the complete process for the manufacture of bleach liquor, from the production of the chlorine gas and the calcium oxide, chlorination, settling, etc. All important data needed in the manufacture are given. The economics of the process are also discussed.—J. F. O.

Annual Report, 1932, of the Bleaching of Pulp. Ladislav Rys and Alfred Bönisch. Zellstoff Papier 13, No. 2: 53-57 (Feb., 1933).—The authors briefly review the methods for determining the degree of decomposition of the pulp, and the methods for determining its whiteness. A method for testing the progress of the bleaching is given. The maximum fibre deterioration is at a pH of 7, while the most optimum pH for bleaching is considered by some to be 9. Bleaching can be divided into two stages, in the first stage the lignin remaining is quickly removed and in the second stage the pulp is bleached to its desired whiteness. The multiple stage bleaching processes are discussed in great detail. Numerous patents are referred to. For easy bleaching pulp the multiple stage process is not recommended since the additional power and heat required in the multiple stage does not compensate for the saving in bleach. Forty one references are made in the periodicals and patent lists and the important facts culled therefrom.—J. F. O.

Chlorine Consumption in Bleaching of Sulphite Pulp. A. Waller. Svensk. Pappers-Tidn. 36, No. 1-8, 11-12, 17 (Jan. 15, 1933).—Chlorine consumption in bleaching is divided between the following reactions: dissolving of incrusting materials, oxidation of dissolved incrustants, evaporation and chlorate formation and attack upon cellulose; the first two are specially treated in this article. The amount of chlorine consumed by the pulp and by the liquor itself was determined experimentally and correlated by means of a series of curves. Results indicate that a two-stage bleaching process and use of high pulp concentration are advantageous.—C. J. W.

Sizing

Colloid Chemical Studies on Rosin Sizing. I and II. Kisou Kanamaru and Takeshi Tsuchida. J. Soc. Chem. Ind. (Japan) 36: 103B-110B (March, 1933).—The author studies the effects of potassium, sodium, magnesium and aluminum chlorides, potassium and aluminum sulphates, hydrochloric and sulphuric acids, caustic soda, and thorium nitrate on the charges of particles in the hydrosals of abietic acid and its sodium soap, and upon the turbidity of these sols. The charge was calculated from the electrophoretic velocity of particles by ultramicroscopical examination, using non-polarizing electrodes. Turbidity was measured by a Zeiss nephelometer. From a discussion of the experimental results the sizing effect of aluminum sulphate is explained as follows: Aluminum sulphate lowers the interfacial potentials of both fiber and rosin particles nearly to a certain low value (the so-called critical potential) and weakens the mutual repulsive force. The fact that aluminum sulphate is the most efficient of all sizing agents seems to be due to the fact that it is most powerful in lowering the interfacial potential and weakening the mutual repulsive force.—A. P.-C.

Rosin Sizing. H. Ainsworth Harrison. Paper Maker & Brit. Paper Trade J. 85, TS 11-14, TS 24-25 (Nov. 1, Dec. 1, 1932); World's Paper Trade Rev. 98, 1274-1276, 1314-1318, 1351-1354, 1388, 1427-1428, 1472, 1475, 1671-1674, 1710, 1713, 1747-1750 (Oct. 21, 28, Nov. 4, 25, Dec. 2, 1932); 99-: 19-24 (Jan. 6, 1933).—A general discussion of the mechanism of sizing and of the effects of the various factors, together with a report of the discussion of the members present at the meeting and of the author's reply.—A. P.-C.

Some Probable Causes of Variable Sizing in Paper Making. J. MacLaren. World's Paper Trade Rev. 98: 883-886, 920-925 (Sept. 16, 1932); Paper Maker & Brit. Paper Trade J. 85: TS 28-29 (Dec., 1932); 86: TS 35-37 (Jan. 1, 1933).—A discussion of variation of sizing from the following standpoints: (1) consideration of rag, wood and esparto and their boiling and bleaching; (2) consideration of the more common systems of size making and the lessons to be derived from each; (3) the behavior of the sizing ingredients both in the beater and on the machine; (4) the part which starch plays in its application to paper manufacture, with probable defects arising therefrom.—A. P.-C.

Sizing Paper Strips of Photographic Roll-Film. I. G. Farbenindustrie A. G. Brit. pat. 353,324 (Dec. 16, 1929).

—The material is sized (suitably in the mass during manufacture) with a size containing montan wax (suitably with a mixture of 4 parts of montan wax to 100 parts of cellulose).—A. P.-C.

Paper. Harold R. Rafton assignor to Raffold Process Corp. U. S. pat. 1,886,120 (Nov. 1, 1932).—A paper mix containing fibrous material and alkaline filler is used and is treated with a size containing saponifiable material such as rosin, a substantially preponderating amount of which is added in unsaponified form.—A. P.-C.

Method of Sizing Paper. Bjarne Johnsen assignor to Hammermill Paper Co. U. S. Pat. 1,903,236 (March 28, 1933).—The sizing material is added to the stock during the latter's travel on the fourdrinier wire.—A. P.-C.

Method of Sizing Paper. I. G. Farbenindustrie Aktiengesellschaft. Fr. pat. 738,991.—Sizing is effected by addition to the paper stock of resins, mineral or vegetable waxes or paraffin, or mixtures thereof, in the form of an emulsion with mono esters of a carboxylic acid of polyglycerines. Precipitation is produced with aluminum sulphate as usual.—A. P.-C.

Sizing Fibrous Material for Fiber Board. George F. Davis. U. S. pat. 1,889,642 (Nov. 29, 1932).—Dry bulk fiber is suspended in a gaseous medium such as air, and a sizing agent such as a rosin size is sprayed onto the material while it is thus suspended. The fibers are then suspended in water and used for making products such as fiber board for shoe heels, etc. An apparatus is described.—A. P.-C.

Aluminate Size. J. J. Healy, Jr., and C. P. Dyer. Paper Trade J. No. 12: 29-31 (March 23, 1933).—The rosin sizing of paper at high pH values and low acidities may be successfully accomplished by regulating the total alumina present, which is most efficiently effected by the substiution of combinations of alum and sodium aluminate for the alum ordinarily used. Such combinations permit a greater flexibility in the sizing operation.—A. P.-C.

Rosin-Wax Sizes. Raymond B. Ladoo. Chem. Met. Eng. 40: 89-90 (1933).—The production and advantages of rosin-wax sizes containing several different proportions of wax, as applied in the paper industry, are discussed. —A. P.-C.

Sizing Composition. George J. Manson. Brit. pat. 363,372 (June 6, 1930).—A non-fouling sizing material for paper or wood pulp contains particles of water-proofing materials, *e.g.*, paraffin wax, mineral oil, pitch, which have been encysted by a precipitate formed, *e.g.*, by the reaction between a solution of sodium silicate, etc., and a precipitating agent such as alum, hydrated lime, hydrochloric acid, etc., or zeolitic substances which form insoluble hydrated silicates or mixtures of silicates and silicic acid. A protective colloid, such as glue or casein, may form an ingredient of the composition. Among examples, wax is melted and formed into an emulsion with sodium silicate solution, alum is added and after further agitation the composition is added to the stock.—A. P.-C.

Process for the Manufacture of Water-Proof Paper or Board. F. Schacht G. m. b. H., Braunschweig Ger. pat. 574,411 (Sept. 1, 1931).—A montan wax size is used for sizing the stock, which added to the beater and precipitated with an acid material gives a very fine emulsion which produces a water-proof sheet. Colloidal silicic acid is mixed in with the size.—J. F. O.

Process for the Preparation of Aqueous Dispersion Means, Especially Sizing Means for Paper, Webs and Similar Fibrous Materials. Bruno Wieger, Braunschweig. Aust. pat. 130,525 (June 15, 1932).—Materials such as natural or artificial resins, waxes, paraffin, bitumina, distillation residues, for example, petroleum, montan, etc. which within feasible temperature limits remains for a long time in a thick fluid condition, are mixed with protective colloids, such as casein, albumin, etc.—J. F. O.

The Theory of Rosin Sizing. R. Lorenz. Papier-Fabr. 30, No. 50: 722-24 (Dec. 11, 1932).—Discussion of the various sizing theories, such as resinate, free rosin, colloid chemistry theory, etc. all of which have certain good points for their support. Bicarbonate hardness, total hardness and other salts, carbonic acid content, the pH and the buffer action of the water all influence the course of sizing. Bacteria can destroy the sizing. In some cases the back water should be neutralized with alkalies while in other cases the pH of the back water should be corrected with sulphuric acid.—J. F. O.

Investigations on the Relation Between Sheet Strength and the Sizing of Unbleached Sulphite Pulp. Ellern Eichmann. Papier-Fabr. 31, No. 12: 197-201; No. 13: 209-13; No. 14: 222-26 (Mar. 19-April 2, 1933).—The author discusses the following, previous viewpoints, rosin sizing with variation in the addition of alum and variation in the amount of rosin, sizing with animal size alone, the absorption of animal size on the fiber, combined sizing with rosin size and animal size, action on sized stock in over heating, sizing the beater stock, and the degree of sizing.—J. F. O.

Preserving Materials, Which Deteriorate Easily, by Means of "Raschit." E. Bolani. Wochbl. Papierfabr. 64, No. 16:280 (April 22, 1933).—The quantity and method for using "Raschit" with a number of paper making materials, such as animal size, gelatine, latex, etc. is given. A very small proportion of "Raschit" will preserve the materials for many weeks.—J. F. O.

Utilization of Proteins from Depilatory Liquors for Sizing Paper. M. Robinov and P. Zotov. Bum. Prom. 12, No. 1: 64-67 (1933); C. A. 27: 3072.—The waste liquor from the unhairing of skins in the manufacture of leather is neutralized with sulphuric acid and the precipitated proteins are dried at 35 deg. and used in sizing of paper with good results.—C. J. W.

The Solution of Resins in Alkali. The preparation of rosin sizes in the paper industry. Walter Gamm. Kolloid.-Z. 62 199-202, 348-350 (1933); C. A. 27: 2049, 2317. —In the first article the Illig (alkali equivalent to rosin), Wurster (alkali less than equivalent) and Delthirna (free rosin) sizes are compared. Wurster's superior results, in conflict with present ideas, were obtained with an alkali cellulose (before the time of sulphite cellulose) which contributed to the alkali content of the added size and increased the dispersion of the size. Sizing quality of a cellulose is related to its ability to swell. In the second article a comparison is made of the results of the Delthirna process with the experiments on the solubility of rosin, which confirms the precipitation rule and especially the fact that an optimum peptizing hydroxyl concentration exists for each precipitate/solution ratio.—C. J. W.

Rosin Sizing of Paper. F. Schutz and W. Klaudit. Papier-Fabr. 31, No. 19: 281-286; No. 20: 295-300; No. 21: 307-311 (May 7-21, 1933).—The properties of aluminum resinate and abietinate are thoroughly described, and it is from these compounds that the basic derivative of the type $AlOHR_2$ are derived from. The formation of these basic salts and their relation to the sizing of paper are explained. The supposition for the free rosin theory, in which the free rosin exclusively gives the sizing effect, is not correct. The explanation of Wurster as well as experimental results which through an exhaustive hydrolysis of the sodium resinate contributes to the formation of this free rosin theory, does not correspond to the facts. It is proved that sodium resinate under conditions which take place in actual practice of sizing is quantitatively

changed over to aluminum resinate. The colloid particles of the commercial free rosin size are not free rosin but consists of an acid salt of resinic acid of the type NaR_4. Regarding the presence of these compounds, the chemical decomposition taking place by the alum precipitation was experimentally investigated and explained. The extraction experiments were proof that aluminum resinate is contained in sized paper and that the quantity of this compound isolated is equivalent to the quantity of bound resin added in the beater for the sizing. On the basis of the experimental proofs, most of the present theories of the rosin sizing of paper are untenable. The author then describes the precipitation, absorption of rosin, etc. which takes place during the sizing. A complete bibliography accompanies the article, together with several valuable tables and equations, making it a valuable addition to the knowledge of sizing of paper.—J. F. O.

Fillers

Process for the Production of a Paste for Increasing the Gloss, Whiteness and Printing Quality of Paper. A. Vadasz. Fr. pat. 739,489; Belg. 390,225 (Sept. 30, 1932).—A paper filler is obtained by treating saponified fatty acid mixtures (such as stearic acids and cocoanut fat acids) with alkaline-earth and magnesium salts; small quantities of salts of heavy metals, such as zinc salts, may be added in the course of manufacture.—A. P.-C.

White Filler Product from Sulphate Liquor Lime Mud. Otto Kress. U. S. pat. 1,894,620 (Jan. 17, 1933).—Green liquor obtained in the sulphate process is treated with lime to form a lime mud and a white liquor; the white liquor is separated and the lime mud is oxidized by a mixture with calculcium hypochlorite, the oxidized mud is washed and filtered, and finally dried and ground.—A. P.-C.

Production of Paper with an Alkaline Filler. Harold R. Rafton assignor to Raffold Process Corp. U. S. pats. 1,892,471 and 1,892,472 (Dec. 27, 1932).—No. 1,892,471—In forming paper by an operation in which an alkaline filler is used with material subject to possible deterioration by the action of such filler, such as sizing materials, a cyclic procedure is employed involving returning substantially all the solids, which are delivered to the paper machine but which do not pass through the driers, to the fibrous mix under conditions favoring a minimum time of contact of the solids with the constituents of the mix. *No. 1,892,472* relates to the manufacture of a sized paper filled with alkaline filler under conditions such that sized fibrous material is mixed with other fibrous material and alkaline filler with only a minimum time of contact of all the combined ingredients before the web-forming operation.—A. P.-C.

Concerning the Retention of Fillers in Unsized Paper. R. Lorenz & R. Stopp. Papier-Fabr. 31, No. 3: 25-33; No. 4: 41-46; No. 5: 53-57 (Jan. 15-29, 1933).—Loading generally means two things, an adsorption process or a filtration process, but with unsized papers it concerns only a filtration process. Under comparable relations there is a close ratio between the amount used and the amount retained. The paper is loaded in such a manner that it becomes richer in filler from the wire side to the top side and the finer particles are retained in the sheet in progressively greater amounts from the wire side to the top side. The finer the filler, the less the retention. The retention increases with the amount of beating of the stock. The numerical relation of the retention figures for well beaten stock and non-beaten is an index for the degree of fineness of the filler. There is less two-sidedness with well beaten stock than with non-beaten stock and the more ground wood a sheet has the more two-sidedness. Numerous curves and tables accompanies the article which is a very valuable contribution to the subject.—J. F. O.

Methods for the Calculation in the Determination of the Cohesion of Kaolin in Paper. Ya. G. Khinchin. Bum. Prom. 12, No. 1: 13-14 (1933).—A discussion.—C. J. W.

Coating Materials

Control of Seconds and Waste in the Manufacture of Coated Paper. C. W. Richards. Paper Trade J. 96, No. 19: 36-38 (May 11, 1933).—A discussion of the importance of a system of control with reference to the defects causing seconds and waste in the manufacture of coated paper, together with an outline of a method for laying out a control program involving classification of defects followed by corrective measures.—A. P.-C.

Coating Paper. Compagnie des Vernis Valentine. Fr. pat. 740,212 (Oct. 17, 1931).—A coating for giving a brilliant surface, particularly to paper or pasteboard, contains nitrocellulose of low or high viscosity, special plastifiers composed of esters of the aliphatic or aromatic series, gums, heavy solvents, higher alcohols and diluents such as benzine or toluene. An example contains 16 per cent nitrocellulose, 20 per cent ethyl acetate, 7.5 per cent butyl acetate, 7.5 per cent butyl lactate, 15 per cent octyl phthalate, 10 per cent ethanol, 4 per cent gum Damar, 3.5 per cent albertol, 2.5 per cent ester gum and 14 per cent toluene.—A. P.-C.

Starch in Paper Making. Th. P. Papeterie 55: 398-405 (April 25, 1933).—A general discussion of the advantages to be used by the proper use of starch in the loading, sizing, coating and pasting of paper.—A. P.-C.

Casein. Harry Bradford. Paper Mill 56, No. 8: 2 (Feb. 25, 1933).—A brief discussion of casein specifications.—A. P.-C.

The Use of Zinc Pigments in the Paper Industry. Otto Kress and Howard M. Cyr. Paper Trade J. 96, No. 10: 35-38 (March 9, 1933).—Investigation of various zinc pigments for use as paper loading material showed that the zinc sulphide pigments give paper excellent opacity, whiteness, brightness and good printing surface, and prevent slime formation.—A. P.-C.

Paper Coating Method and Apparatus. Charles C. Colbert and George E. Preston assignors to American Coating Mills. U. S. pat. 1,903,325 (April 4, 1933).—A preliminary light coating of clay is applied to the paper and air-dried at room temperature in a festoon drier. A second coating is then applied and brushed on to the sheet, which is then dried with heated air.—A. P.-C.

Influence of Particle Size Distribution in Clays on Hand Sheet and Coating Characteristics. Robert D. McCarron and Ben W. Rowland. Paper Trade J. 96, No. 22: 36-39 (June 1, 1933).—The particle size and distribution of clays may be easily determined by means of a sedimentation balance and the method of Calbeck and Harner (*Ind. Eng. Chem.* 19, 58-61, Jan. 1927). Retention in hand sheets varies directly as the size of the filler particles; in coating, the characteristics of the coating mixture are determined by the fineness of the clay.—A. P.-C.

Dyeing

New Processes in the Field of Paper Dyeing. A. Foulon Wochbl. Papier-fabr. 64, No. 3: 38-40 (Jan. 21, 1933).—The methods described in several of the recent patents are given.—J. F. O.

Method of Coloring Paper. William H. Grogan and Frank C. Ladd assignors to Keith Paper Co. U. S. pat. 1,889,020 (Nov. 29, 1932).—Bubbles of colored liquid such as colored soap solution are introduced into the stock.—A. P.-C.

Drying

Drying of Pulp and Paper. I. Mechanism of Air Drying. D. W. McCready. Paper Trade J. 95, No. 11: 31-36 (Sept. 15, 1932).—Experimentally determined drying curves showed no change in the mechanism of drying of pulp slabs of different degrees of porosity. Proper sizing requires that the optimum conditions of temperature and acidity should be reached while the paper still contains free water.—A. P.-C.

Automatic Temperature Control of Paper Machine Driers. A. H. Stanton and L. H. Brendel. Paper Ind. 15: 29-30 (April, 1933).—An explanation of the mechanism and advantages of the thermo-pressure compensation system of automatic drier temperature control, which controls the pressure of the heating steam to the heater and automatically resets this pressure by the temperature in accordance with the load demand, so as to maintain an accurate unvarying temperature in the drier.—A. P.-C.

Drying Cylinder Drainage. Anon. World's Paper Trade Rev. 98: 639-642 (Aug. 26, 1932).—A brief discussion of the merits of the MacIvor automatic system, the principal feature of which is a specially designed water-seal or water-leg proportioned to deal with the maximum duty of the battery of driers and having no moving or adjustable devices between the valve which admits the initial drying steam to the system and the rotary vacuum pump which is used (in most cases) to evacuate the wet-end group of cylinders.—A. P.-C.

Drying Cellulosic Materials. W. B. Campbell. Brit. pat. 359,641 (Sept. 8, 1930).—Paper pulp is dried by displacing the water by one or more washings with a non-aqueous liquid such as alcohol or acetone (which may in turn be displaced by ether) and then drying by evaporation.—A. P.-C.

Paper Machine Drier Roll. Charles H. Wallden. Fr. pat. 737,720.—A welded sheet-steel shell is used, and is plated with 0.1 to 0.2 mm. of chromium.—A.P.-C.

Device for the Rapid Drying of Drier Felts. Rheinhard Schulze. Fr. pat. 738,325.—The usual steam-heated felt drier rolls are replaced by perforated rolls into which is introduced hot air which passes through the felt; the roll may be surrounded by a suitable casing permitting of recovering the air after it has passed through the felt so that it may be re-used.—A.P.-C.

Drying Rate for Kraft Paper. A. E. Montgomery. Paper Trade J. 96, No. 11; 32-35 (March 16, 1933).—A discussion to the effect of steam pressure, weight of sheet, freeness, and size of machine on drying rate, as brought out in data obtained in answer to a questionnaire sent to U. S. kraft paper mills.—A. P.-C.

Drier Head. Lawton A. Dix. U. S. pat. 1,900,166 (March 7, 1933).—A cooling drier is provided with heads having large openings to permit of easy outflow of large amounts of cooling water. Suitably shaped fins are attached to the heads to assist the distribution of the cooling water over the surface of the roll.—A. P.-C.

Felt Drier. William P. Feeney. U. S. pat. 1,898,041 (Feb. 21, 1933).—A number of felt-drying rolls are interposed between the paper driers, instead of being placed before or after all the driers around which each felt passes.—A. P.-C.

Drier Roll. Thomas L. Brannen assignor to Brown Co. U. S. pat. 1,899,256 (Feb. 28, 1933).—The surface of the roll is formed of a number of separate blocks of metal, into which steam pipes are cast to permit of heating the large surface.—A. P.-C.

A Survey of the Drying of Paper and Cellulosic Paper Making Materials. F. A. Simmonds. Paper Trade J. 96, No. 20: 31-35 (May 18, 1933).—A survey of the literature on the drying of paper and cellulosic paper making materials for the physical and chemical testing used in the evaluation of pulpwood, pulp, stuff or paper. Bibliography of 31 references.—A. P.-C.

Nuances for the De-Watering of Stock and the Screening. Martin Buttner. Wochbl. Papierfabr. 64, No. 7: 121-22 (Feb. 18, 1933).—A de-watering cylinder is described in which there is no dead spots on the screen surface, the whole surface acts as a working face. A flat knotter screen which offers the following advantages, a surface with more open space and therefore greater capacity, possibilities of better screening and freedom from stock catching on edges, etc. And a screen mantel with fine holes for centrifuges is described.—J. F. O.

Drying Cylinder with a Double Shell Heated with Steam, Especially for Paper Machines. Paul H. Muller, Hannover. Ger. pat. 569,099 (July 31, 1929).—The steam used for heating the dryer cylinder passes between the double shell of the cylinder.—J. F. O.

Arrangement for the Stretching of Dryer Felts on Paper, Carton and Similar Machines, by Means of Compressed Air or Compressed Liquid. Firma J. M. Voith, Heidenheim. Ger. pat. 569,439 (April 14, 1931).—J. F. O.

Arrangement for the Drying of Dryer Felts on Paper Machines by Means of Warm Air. Bosdorfer Maschinenfabrik u. Eisengiesserei, Bosdorf. Nor. pat. 51,705 (Oct. 9, 1929).—J. F. O.

Dryer Felts for Paper Machines. Thomas Hindle, Haslingden, England. Nor. pat. 51,745 (Aug. 23, 1929).—The felt consists of several layers, the outer layer being a uniform porous web, while the inner layers contain dense groups of warp threads.—J. F. O.

Canal Dryer. Aktiebolag Svenska Flaktfabriken, Stockholm, Sweden. Ger. pat. 569,202 (May 7, 1929).—Air is circulated across the path of the material, and heating tubes are located on the side walls of the dryer.—J. F. O.

Canal Stage Dryer. Paul Buschmann, Zittau. Ger. pat. 76,005 (Feb. 15, 1930).—J. F. O.

Arrangement on Drying Cylinders with Welded Seam and Equipped with Doctors. C. H. Wallden, Gothenburg. Swed. pat. 75,988 (May 3, 1930).—The welded drying cylinder mantel has a seamless covering of chromium or other material with a comparable hardness. This covering forms the working surface of the drying cylinder and is appreciably harder than the material of the doctor.—J. F. O.

Arrangement of Drying Cylinders in Paper Machines. E. A. Oehlin, Hyltebruk. Swed. pat. 76,201 (Dec. 11, 1929).—J. F. O.

Arrangement on Horizontal Revolving Drums or Ovens for the Drying or Similar Treatment of Materials with Warm Air. J. D. Ullgren, Stocksund. Swed. pat. 76,005 (Feb. 15, 1930).—J. F. O.

Drying Cylinder for Paper and Pulp Drying Machines. C. H. Wallden, Vallbo. Finn. pat. 14,721 (April 23, 1931).—The welded drying cylinder cover has a layer of chromium or other material of similar hardness.—J. F. O.

Drive Arrangement on a Paper Machine for Dryers Arranged in Groups and Provided with Felt Dryers. A. Bol. Svenska Kullagerfabriken, Gothenburg. Swed. pat. 76,627 (Oct. 25, 1930).—The drying cylinders do not require any special drive since they are driven by the dryer felt.—J. F. O.

Dryer Installation With a Number of Drying Units and a Heat Recovery Apparatus. A. Bol. Svenska Flaktfabriken, Stockholm. Swed. pat. 76,354 (Nov. 11, 1927).—The drying units are connected to the fresh air

inlet and the moist air outlet by means of the heat recovery apparatus. Valves are provided for the regulation of the flow of air in each unit and independent of the other units.—J. F. O.

Process for the Drying of Stock. A./S. Thunes Mekaniska Verksted, Oslo. Nor. pat. 52,108 (March 26, 1930).—A system in which air used in one section of the dryer is again used in another section.—J. F. O.

Process for the Drying of Pulp, Carton and Paper on Cylinder Drying Machines. H. Arnold, Kaukas, Finland. Finn. pat. 14,882 (March 21, 1931).—Air is circulated in an enclosed system, the moistened air from the top row of dryers is removed and blown to the following series of lower dryers. A part of the moist air is constantly removed and replaced by fresh air.—J. F. O.

Arrangement for the Drying of Paper and Webs. Caliqua Warmegesellschaft m.b.H., Berlin. Ger. pat. 572,529 (Dec. 30, 1928).—J. F. O.

Paper Permanency

The Relative Stabilities of Bleached Rag Half Stocks and Bleached Purified Sulphite Pulps to Degradation by Calcium Hypochlorite Solutions. Harry F. Lewis. PAPER TRADE J. 96, No. 19: 41-46 (May 11, 1933).—A study of the relative chemical stabilities of certain selected rag and purified wood pulps toward degradation by strong calcium hypochlorite solutions further supported the conclusion expressed in a previous paper that rag stocks of the type of No. 1 muslin are more resistant to the degrading action of chemical and physical agencies than are the purified wood pulps.—A. P.-C.

Practical Factors in the Permanence of Sulphite Papers. James Strachan. Paper Maker & Brit. Paper Trade J. 86: TS33-34 (Jan. 2, 1933).—Practical notes on choice of materials, bleaching, washing, beating and drying, with a view to obtaining maximum permanence in sulphite paper.—A. P.-C.

Brief Study of Some Old Papers. W. V. Torrey and E. Sutermeister Paper Trade J. 96, No. 21: 45-46 (May 25, 1933).—Determination of ash, alpha-cellulose and copper number in papers ranging from 100 to 900 years old indicated that an original high alpha-cellulose content is not necessary for paper which is to last for several centuries, and that probably the chemical characteristics of the paper as a whole, rather than those of the fibrous portion only, are responsible for its permanence or lack of permanence.—A. P.-C.

Testing of Blotting Paper. Papier-Ztg. 58, No. 32: 555 (Apr. 22, 1933).—Reference is made to simple absorption and blotting tests which can be used with sufficient accuracy in the place of the more expensive Klemm and Dalen testers.—C. J. W.

The Pulfrich Photometer as an Aid for the Colorist. F. C. Jakoby. Melliand Textilber. 14, No. 4: 194-196 (Apr., 1933).—Different applications of the Pulfrich step-photometer are described. Its use as a glarimeter is emphasized.—C. J. W.

Investigation of Various Methods for the Determination of the Copper Number and the Significance of the Copper Number for the Judging of the Loss in Strength of Cellulose. R. Smit and J. Ph. Peper. Chem. Weekblad 30: 234-242 (1933); C. A. 27: 2295.—The methods of Dokkum, Braidy, Wenzl, Hagglund and Knecht-Thompson for the determination of the copper number have been compared. The experiments were made with bleached cotton fabrics treated either with sulphuric acid or with solutions of sodium hypochlorite. With each of the methods good reproducible results were obtained. The Wenzl method always gave the lowest results and proved to be less sensitive. The other methods were equivalent but the method of Dokkum is preferable, being the quickest and simplest. A definite copper number does not always correspond with the same loss of strength. The copper number probably agrees better when the material is treated after the attack with a solution of soda and this would replace the determination of the fluidity of Clibbens and Ridge.—C. J. W.

Pulp and Paper Testing

Strength Determination of Sulphite Pulp. H. Roschier. Finnish Paper and Timber J. 15, No. 7: 270-272, 274-276 (Apr. 25, 1933).—Fibrillation, swelling and gelatinization are accepted as the most prominent theories as to sheet formation. Swelling is said to determine the grade of paper made from a given pulp. The author removes samples from the digester at various intervals and from subsequent tests draws the following conclusions. Rawer pulps result in greater swelling and stronger sheets. Breaking length at a given degree of decomposition varies with moisture content. Colloidal properties and swellability of dry pulp are altered and a weaker sheet results. Indirect heating and circulation yield pulp that swells considerably and produces a strong sheet. Strong liquor low in lime yields a better grade of pulp than a weaker liquor rich in lime. Breaking surface is dependent on fiber length and degree of decomposition of cellulose. Bleaching injures swellability and breaking length but increases breaking surface. Dry pulp has a greater breaking surface than the same pulp in fresh condition.—C. J. W.

A Rapid Permanganate Method for Determining the Degree of Disintegration of Sulphite and Sulphate Pulps. David Johannson. Svensk Pappers-Tidn. 35: 615-617 (1932); C. A. 27:1750.—Johannson comments on the report of the standardization committee and points out For all other unbleachable pulps Ostrand's potassium permanganate method, giving the results in percentage of calcium hypochlorite, is a rapid method for plant control. For all other unbleachable pulps Ostrand's potassium permanganate method, giving the results in Roe's chlorine number, furnishes a rapid method of control.—C. J. W.

Conversion Curves. O. M. Halse and D. Johansson. Svensk Pappers-Tidn. 36, no. 4:156 (Feb. 28, 1933). —Data are given for the construction of curves, relating Roe's chlorine number, The Bergman number, the Tingle number and Sieber's chlorine number.—C. J. W.

Sources of Error and Limits of Error in the Analytical Determination of the Weights of Ground Wood and Pulp in Paper. Chr. Anker, K. Haug and E. Stephansen. Papier-Fabr. 31, No. 6: 61-62 (Feb. 5, 1933). By determining the quantity of lignin in a paper, the fiber analysis can be made using certain values for the lignin content of the ground wood and pulp. In this case 26.6 per cent lignin for ground wood and 3 per cent lignin for pulp is used. The authors discuss the errors in this method.—J. F. O.

Improved Colorimetric pH Testing Method According to Todt and Its Use in the Paper and Pulp Industry. G. Gallnow. Wochbl. Papierfabr. 64, No. 4: 60 (Jan. 28, 1933).—Description of the method. A spot plate is used instead of the usual test tubes.—J. F. O.

Beating of Stock in Small Quantities and the Preparation of Test Sheets. G. Strecker and U. Kirchner. Wochbl. Papierfabr. 64, No. 5: 77-81 (Feb. 4, 1933).—Description of a method for the testing of various kinds of pulp and stock, by beating in the rotating cross laboratory beater and the preparation of test sheets of the beaten stock.—J. F. O.

A Practical Piece of Apparatus for the Laboratory. E. Koppe. Wochbl. Papierfabr. 64, No. 6: 102 (Feb. 11,

1933).—A whipped cream beater is recommended for use in breaking up pulp and stock for copper number testing, etc. The stock is first cut up into small pieces and then submerged in water.—J. F. O.

The Microscopic Difference of Unbleached Suphate Pulp and Sulphite Pulp According to the Lofton and Merritt Method. State Material Testing Bureau, Berlin-Dahlem. Wochbl. Papierfabr. 64, No. 9: 159 (March 4, 1933).—Notes on results obtained in the use of this method.—J. F. O.

New Times, New Standards. Wochbl. Papierfabr. 64, No. 14:240-41 (April 8, 1933).—The author discusses the various air dry percentages in the countries using pulp and paper and endeavors to show that this method of calculation should be done away with since it leads to errors in cost.—J. F. O.

Alpha-Cellulose in Pulp. William R. Willets. Paper Trade J., 96, No. 11: 35-36 (March 16, 1933).—A compilation of suggestions and criticisms relative to the official T.A.P.P.I. method, together with changes proposed in the method.—A. P.-C.

Effect of Pebble Weight Variation in the Strength Testing of Wood Pulp. F. C. Peterson and John Kolesinskas. Paper Trade J. 96, No. 20: 26-28 (May 18, 1933).—A longer time is required to reach maximum burst and there is a decrease in tear and freeness when the pebble load is increased.—A. P.-C.

Controlling the Quality of Chemical Wood Pulp for Rayon Manufacturer. R. Palinert. Papier 36: 449-452 (May, 1933).—The importance of uniformity of quality of successive shipments received at a given viscose plant is emphasized. The methods for determining moisture, alpha-cellulose, viscosity, beta-cellulose, gamma-cellulose, resins, ash, total inorganic constituents and lignin are briefly described.—A. P.-C.

Moisture Content Measurements. T. E. Heppenstall and H. A. Hauff. Paper Trade J. 96, No. 21: 43-45 (May 25, 1933).—A brief discussion of various adopted and proposed moisture testing methods adaptable to the paper and pulp industry, together with a presentation of recent progress in the use of the Tag-Heppenstall moisture meter as adapted to the testing of pulp and paper.—A. P.-C.

A Simple and Reliable Photo-Electric Opacity Tester. Myrl N. Davis. Paper Trade J. 96, No. 19: 38-40 (May 11, 1933).—A critical analysis of the commercially available opacity meters, together with a statement of the standards required for opacity measurements and a description of a new instrument which has been designed to conform to these standards.—A. P.-C.

The Blancometer and Its Uses. S. R. H. Edge. World's Paper Trade Rev. 98: 1907-1908, 1946, 1949; 1983-1986, 2020; 2056-2062 (Dec. 16-30, 1932): Paper Maker & Brit. Paper Trade J. 86: TS 40-46, TS 53-57 (Jan. 2, Feb. 1 1933).—A description of the principle, construction and operation of the instrument, constructed by Adam Hilger, Ltd., London, together with a discussion of its merits and of the significance of the readings, particularly as relates to its use in the examination of paper (especially white paper). The instrument can be used for measuring brightness and color, and also for obtaining information as regards opacity and gloss.—A. P.-C.

Cambridge Opacity Meter and Electrometric pH Apparatus. Anon. Paper Maker & Brit. Paper Trade J. 85: TS 262-263 (Sept. 1, 1932).—A brief description of the opacity meter and H-ion measurement apparatus constructed by the Cambridge Instrument Co., London, England.—A.P.-C.

A Proposed Standard Instrument for Classification of Paper Making Fibers According to Length. G. D. O. Jones, C. Alexander, T. W. Ross and H. Wyatt Johnston. Paper Trade J. 96, No. 17: 29-36 (April 27, 1933).—An instrument has been devised to classify fibers according to length by presenting them broadside-on to a series of wire-mesh screens by imparting to a liquid suspension of fibers a velocity parallel to the screen which is large compared to the velocity of flow of the liquid through the screen, thus minimizing endwise presentation of fibers.—A. P.-C.

Study of the M. I. T. Paper Folding Tester. L. W. Snyder and F. T. Carson. Paper Trade J. 96, No. 22: 40-44 (June 1, 1933).—There is some correlation (though not altogether conclusive) between the variation in individual tests of paper and the measured variables of the instrument; but there is no correlation between the results obtained with the M.I.T. and Schopper folding testers. A technic for the use of the M.I.T. tester is suggested.—A. P.-C.

Bursting Strength Tester. Samuel N. Senna assignor to B. F. Perkins & Son, Inc. U. S. pat. 1,901,359 (March 14, 1933).—The invention provides an attachment to a Mullen type tester whereby the chamber may be kept completely filled with liquid without having to remove the platform.—A. P.-C.

Testing the Strength of Paper With the Punctuating Dynamometer of F. Schubert. Felix Noss and Hans Sadler. Wochbl. Papierfabr. 64, No. 21: 360-63 (May 27, 1933).—The punctuating dynamometer is described in detail with results on the strength testing of paper compared with other testing apparatus.—J. F. O.

The Porosity of Paper. Walter Stoewer. Wochbl. Papierfabr. 64, No. 4: 57-59 (Jan. 28, 1933).—The relation of porosity to suction, duration of test, moisture content of paper, degree of beating and specific gravity are discussed. Results show that the paper becomes less porous during the test, hence a certain time interval should be established. Paper from well-beaten stock acts differently from the unbeaten, with various moisture contents.—J. F. O.

The Testing of Paper Used for the Mouth Piece of Cigarettes for Elasticity. Karl Mandl. Papier-Fabr. 31, No. 10:113-114 (March 5, 1933).—Description of the operation of the tester to determine the elasticity of the paper, together with results of tests on various papers.—J. F. O.

The Porosity of Paper. Wochbl. Papierfabr., 64, No. 10: 174 (March 11, 1933).—The author first describes the method he uses for determining the porosity of paper. He then refutes a previous article, and shows by his results that there is no ratio between the porosity and the vacuum. The relation between the porosity and the duration of the test is then discussed, the author believing that the reason that a paper is less porous after about 10 minutes under vacuum, is that the fibers and filler in the sheet is gradually pressed together due to the pressure exerted on the one side.—J. F. O.

Progress in the Testing of Paper and Pulp During the Year 1932. Korn. Wochbl. Papierfabr. 64, No. 17: 293-95; No. 18: 307-09 (Apr. 29, May 6, 1933): Zellstoff Papier 13, No. 5: 197-201 (May, 1933).—The author briefly discusses the important improvements made in the testing of pulp and paper during the year 1932, including a bibliography of the source of the information. Several investigations on the length of life of paper are abstracted, microscopical, chemical and physical tests on paper are reviewed in brief. New methods for the determination of moisture in pulp are reviewed, methods for determining the degree of decomposition or cooking, alpha determinations, etc. as well as methods for making physical tests on the pulps are discussed.—J. F. O.

A New Process for Making a Comparative Test of Papers. K. Franz Kremm. Wochbl. Papierfabr. 64, No. 19:324-28 (May 13, 1933).—By means of a special photographic method, the formation and "look through" of a sheet of paper can be compared with others. The paper is directly photographed on a film on which the characteristics of the sheet are clearly brought out, such as degree of hydration, formation, opacity, wire marks, etc.—J. F. O.

Analysis of Cigarette Papers. M. Marini. Papier 36: 345-361 (April, 1933).—A description of the methods for physical, chemical and mechanical tests used at the Italian experiment station for papers and textile fibers.—A. P.-C.

Solubility of Barium Sulphate in Concentrated Sulphuric Acid and Its Application in the Analysis of Papers. M. Brot and M. Buisson. Papier 36: 441-442 (May, 1933).—The solubility of barium sulphate in 96 per cent sulphuric acid at 150° C. is approximately 130 g. per l., and remains practically the same on cooling to atmospheric temperature. This is probably due to formation of $BaSO_4.H_2SO_4$ on heating as previous investigators have shown that the solubility on mixing barium sulphate with cold sulphuric acid is only about 2 to 3 g. per l. The reaction can be used for identifying and determining barium sulphate in the acid-insoluble portion of paper coating.—A. P.-C.

Physical Tests for Paper Sub-Committee Report. James d'A. Clark. Paper Trade J. 96, No. 16: 35-36 (April 20, 1933).—Suggestions are made concerning the present official T.A.P.P.I. methods for sampling, conditioning, substance, thickness, burst, tear, tensile strength, stretch and folding, with a view to evolving, if possible, universally accepted international standard methods.—A. P.-C.

Testing the Blood Resistance of Butchers' Wrapping Paper. C. E. Libby and Leonard Parkinson. Paper Trade J. 96, No. 18: 37-40 (May 4, 1933).—The blood resisting properties of butchers' wrapping papers can be determined satisfactorily by the application of blood serum to the surface of these papers in an Abrams penescope tester, bromocresol purple being a suitable indicator for determining the end point of the test.—A. P.-C.

Determination of Sulphides in Papers. Laboratoire Navarre. Pyrex-Documentation No. 9: 255 (Nov., 1932); Ann. Fals. 26: 46-47 (1933).—The method consists essentially in heating 50 g. of paper with hydrochloric acid to drive off volatile sulphur acids which are received in bromine water acidified with hydrochloric acid, precipitated, and weighed as barium sulphate and calculated to hydrogen sulphide.—A. P.-C.

The Rigidity of Boxboard. S. F. Smith. World's Paper Trade Rev. 99:403-408, 442-446; 483, 486, 520-526 (Feb. 10, 17, 1933); Wochbl. Papierfabr. 64. No. 20:-342-343 (May 20, 1933).—A method of measuring rigidity is described, depending on the estimation of the force required to deflect the centre of a strip of board through a definite distance, the ends of the strip being free and resting on two rollers. It is shown that: Rigidity $= K \times$ thickness$^3 \times$ density, in which K is called the "rigidity constant" and expresses the intrinsic rigidity of the material of which the board is composed. There is no satisfactory method available for determining the rigidity of paper under elastic conditions. The relationships worked out between rigidity, thickness, density and bulk of boards also hold for papers.—A. P.-C.

The Relationship Between the Bursting and Tensile Strength Tests. D. Roberts. World's Paper Trade Rev. 98:1106-1110 (Oct. 7, 1932).—By substituting for the usual circular aperture an oblong aperture in the Mullen tester, the tensile nature of the bursting strength test is emphasized; the disturbing influences due to the circular shape of the aperture are eliminated and the test is made a tensile test in one direction specifically. The results obtained on newsprint with the modified bursting test give ratios, for machine direction to cross direction, which are lower than those given by the Schopper results.—A. P.-C.

Paper Specialties

Production of Thin Asbestor Paper. P. Shumilov. Bum. Prom. 12, No. 1:39-42 (1933).—A discussion.—C. J. W.

More About Condenser Paper. I. V. Tzetzero. Bum. Prom. 11, No. 11:62 (1932); C. A. 27:1752.—A good grade of condenser paper was obtained by treating rag waste 1 hour with cold 0.5% sodium carbonate and bleaching with 1% active chlorine.—C. J. W.

Asphalt Reinforced Paper. F. Hoyer. Svensk Pappers-Tidn. 36, No. 8:292-295 (Apr. 30, 1933).—The paper summarizes recent developments in shipping papers that are reinforced with linen or cotton threads and made impervious to water by asphalting. Economic considerations, advantages and disadvantages met in the preparation of these papers are likewise discussed.—C. J. W.

Hull Fiber for Filters. Belani. Kunststoffe 23. No. 3:55-57 (Mar., 1933).—Description of the process for converting hull fiber into filter paper and filter wadding.—C. J. W.

Process for the Manufacture of Bituminous Board. Albert Sommer, Dresden. Ger. pat. 514,730 (Nov. 10, 1925). The bituminous board is made by adding a bituminous material capable of emulsifying, to the stock mixture. The asphalt is added in a molten condition to the fiberous mixture and the emulsion formed by agitation while hot.—J. F. O.

Process for the Impregnation of Work Materials, Such as Wood, Webs and Paper. I. G. Farbenindustrie A.G., Frankfurt a.M. Ger. pat. 567,261 (June 4, 1931). The materials are drenched in wax-like chlorinated hydrocarbons, such as multiple chlorinated naphthalin or diphenyl. The combustibility is simultaneously decreased by the addition of substances similar to ammonium diphosphate. And lastly the material is subjected to a heat treatment.—J. F. O.

Process for Increasing the Wet Strength of Films, Plates, Threads, Bands and other Forms of Cellulose, Cellulose Hydrate or Cellulose Ethers. Wolff & Co. & Richard Weingand, Bomlitz. Ger. pat. 567,087 (Oct. 13, 1927).—J. F. O.

Process for the Manufacture of a Product Similar to Board. P. B. Burchardt, Nasviken. Swed. pat. 76,082 Sept. 14, 1931). The product consists of two or more layers of pulp in band or sheet form. Before the pressing together of these layers, tar or asphalt is applied between the layers as a binding material.—J. F. O.

Process for the Impregnation of Board and Similar Materials. Oscar Haussler & Willy Meinl, Karlsbad, Czech. Aust. pat. 129,995 (May 15, 1932). One part by weight of American W. W. rosin, 2 to 3 parts by weight of benzol and 3 to 6 per cent of the total weight of both constituents of vaseline oil.—J. F. O.

The Marbled or Mottled Effect on Paper and Board. Markus. Wochbl. Papierfabr. 64, No. 13:224-25; No. 15:256-57 (Mar. 31, April 15, 1933). The author discusses the methods for giving paper and board a mottled appearance, the stage in the production when the mottling fibers are added, the colors or dyes used and the various apparatus which can be used.—J. F. O.

Process and Arrangement for Water-proofing Webs

of Fiberous Materials, Especially Paper and Board Webs. Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij, Hague. Aust. pat. 130,944 (July 15, 1932). A controllable quantity of the water repellant material in the form of a concentrated dispersion is brought in contact with the material to be water-proofed.—J. F. O.

Hard Paper or Hard Webs of Several Layers of Paper or Webs. A. E. G. Union Elektrizitats Gesellschaft, Vienna. Aust. pat. 130,643 (June 15, 1932). The hardening agent is a quick hardening condensation product of multiple valent phenols and aldehydes.—J. F. O.

Process for the Preparation of Solutions of Cellulose or Cellulose Compounds. Zellstofffabrik Waldhof, Manheim. Aust. pat. 130,653 (June 15, 1932). The starting product is a good bleachable soda or sulphate pulp which has been separated from all foreign materials throughout the entire process.—J. F. O.

Process for the Production of Metallized Material, Especially Webs of Paper. Leopold Rado, Berlin. Ger. pat. 570,454 (Feb. 8, 1928). The invention concerns itself with a process whereby a layer of metal powder is applied to a support and then covered by a transparent, fiber-free cellulose membrane, especially of cellulose hydrate.—J. F. O.

Process for the Manufacture of Surface Coated Papers. Peter Spence & Sons Ltd., Manchester. Swed. pat. 76,628 (July 30, 1931). The process consists of bringing a color or lacquer containing water-free calcium sulphate which is finely divided.—J. F. O.

Process for the Manufacture of a Board Subjected to a Pre-drying on a Board Machine. C. W. Rasch, Djupadal. Swed. pat. 76,567 (Nov. 15, 1929). The stock taken up from the de-watering cylinders in several layers is rolled up on a formation roll heated by steam, electric current or otherwise, whereby the individual layers are pre-dried, pressed together and united to form the board. The board which is not completely dried is then cut and removed from the formation roll, pressed in a hydraulic press and finally dried with warm or cold air.—J. F. O.

Process for the Manufacture of Fiberous Board. J. Jonsson, Stockholm. Swed. pat. 76,624 (June 12, 1930). Wood that has been chopped up but has not had any previous chemical treatment, is subjected to treatment between two rolls. The peripheral speed of one of the rolls is at least 75 times greater than the other roll. Boards are then made from the material thus prepared without the addition of a binding substance.—J. F. O.

Process for the Manufacture of Impregnated Board, Especially for Roofing. Alexander Malchow, Berlin. Ger. pat. 573,115 (Aug. 11, 1928).—J. F. O.

Roofing Tar Paper. Vedag, Vereinigte Dachpappenfabrik A.G., Berlin. Nor. pat. 51,917 (July 26, 1930). The tar paper has a covering which consists of a mixture of coal tar with a finely ground filler. On top of this is a layer of water repelling mineral matter such as talc, soap stone meal and similar substances.—J. F. O.

Arrangement for the Production of Insulating Board from Wood Fiber Stock. Xylotin Akt. Ges. Thusis, Switzerland. Ger. pat. 572,849 (May 7, 1932). A system of forming frames are used.—J. F. O.

Process for the Coating of Cellulose or Materials Containing Fibers with a Water-proof Protective Layer of Caoutchouc or Similar Plant Resin. Dunlop Rubber Co. Ltd., London. Ger. pat. 572,919 (June 22, 1930). Substances containing fibers such as paper, board and similar materials are coated with a water-proof protective layer of caoutchouc or similar plant resin. Plant or mineral waxes are mixed with the caoutchouc.—J. F. O.

Process for the Manufacture of Fancy Papers on a Paper Machine. I. G. Farbenindustrie Akt. Ges., Frankfurt a.M. Ger. pat. 574,984 (Nov. 27, 1930). Cellulose derivatives, such as cellulose esters, nitro cellulose, acetyl cellulose, etc. or cellulose ethers, ethyl cellulose, benzyl cellulose, etc. in the form of a spray or drops, are applied in the usual technical manner upon the paper stock as it leaves the stock inlet. These derivatives are dissolved in an organic solvent and are colored if required, and when they come in contact with the paper stock on the wire they are precipitated by materials contained in the stock itself.—J. F. O.

Process for the Manufacture of Carbon Paper, Copy Paper and Similar Papers. Karl Schindler, Berlin. Ger. pat. 574,540 (May 23, 1930). According to the invention, a printing or carbon color containing a fat or wax is saponified with liquor and applied to the paper warm or cold and diluted with water. Oils, fats or waxes are mixed in the usual manner with lampblack, earth colors or aniline dyes of a printing or coating color and saponified with or without additions of wax or fatty acids by alkali liquor. After the saponification, water is applied.—J. F. O.

Combined Insulating and Covering Board for Building Purposes and the Process for its Manufacture. H. E. Orvin, Oslo. Finn. pat. 14,697 (Aug. 3, 1931). The board consists of a layer of fire-proof material to which is bound a board having air spaces.—J. F. O.

Process for the Manufacture of Insulating Paper, Especially Cable Paper. Viktor Bausch, Berlin. Aust. pat. 131,595 (Aug. 15, 1932). The raw paper is drenched completely and in such a manner that besides complete penetration there is a layer of the drenching material on each side of the sheet. The paper is then introduced into a pressure boiler.—J. F. O.

Process and Arrangement for the Manufacture of Material Covered with Metal Foil, with Impressions. Leopold Rado, Berlin. Ger. pat. 572,680 (May 1, 1929). —J. F. O.

Special Automatic Paper Machine for One-sided Highly Finished Paper. Josef Hrasdira, Ullersdorf. Ger. pat. 572.404 (May 12, 1931).—J. F. O.

Process and Arrangement for the Production of Paper, Board, Carton, Insulating, Wall Board and Building Board by the Further Treatment of Pulp. A. Ges. für Halbzellstoffindustrie, Basel, Switzerland. Finn. pat. 14,777 (Oct. 17, 1930). The material containing the fiber is mixed with water and then placed in a centrifuge, the solid particles are thrown against a cutting apparatus with a great velocity which is due to the centrifugal force. The process should be carried out at a temperature under 80° C. so that there is no slime formation or discoloring of the stock. An addition of chemicals is used to aid in removing the incrustants through mechanical defibration.—J. F. O.

Water Strength and Water-proof Paper. Wochbl. Papierfabr. 64, No. 17:295-96 (April 29, 1933). In order to obtain a paper with good wet strength, an intensive, water insoluble sizing and a "gluing" together of the fibers are necessary. The author gives several formulas, taken from the practice and patents, which will give a paper a good water strength and also make it water-proof.—J. F. O.

Process for the Production of Board, which is Provided with a Special Layer of Covering on One or Both Sides. Alois Ederer, Graz. Aust. pat. 132,487 (Oct. 15, 1932). Separate webs of stock are brought together under certain conditions and pressed.—J. F. O.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING DECEMBER 30, 1933

CIGARETTE PAPER

American Tobacco Co., Indep. Hall, Bordeaux, 1100 cs.; Champagne Paper Corp., Indep. Hall, St. Nazaire, 45 cs.; American Tobacco Co., Champlain, Havre, 400 cs.

WALL PAPER

J. E. Bernard & Co., New York, Hamburg, 5 bls.; F. J. Emmerich, New York, Hamburg, 2 bls.; R. F. Downing & Co., Majestic, Southampton, 9 bls.

NEWS PRINT

Perkins Goodwin & Co., New York, Hamburg, 534 rolls; Jay Madden Corp., Carplaka, Wiborg, 62 rolls; Jay Madden Corp., Carplaka, Kotka, 708 rolls; Lunham & Reeve, Carplaka, Kotka, 451 rolls; Jay Madden Corp., Berlin, Bremen, 133 rolls; Clinton Paper Co., Manhattan, Hamburg, 103 rolls; Brooklyn Times, Hollaren, Norrkoeping, 424 rolls; Gilman Paper Co., Hollaren, Norrkoeping, 809 rolls.

PRINTING PAPER

Ozalid Corp., New York, Hamburg, 9 cs.; E. Dietzgen & Co., New York, Hamburg, 49 cs.; Senefelder Co. Inc., New York, Hamburg, 12 cs.; International F'd'g Co., E. Francqui, Antwerp, 15 rolls.

WRAPPING PAPER

Standard Products Corp., Pennland, Antwerp, 7 cs.; Walker Goulard Plehn Co., Manhattan, Hamburg, 813 rolls.

PACKING PAPER

Scharf Bros. Inc., Black Heron, Rotterdam, 14 cs.

FILTER MASS

Globe Shipping Co., Pr. Harding, Hamburg, 42 cs., 4 bls.

FILTER PAPER

H. Reeve Angel & Co., Inc., Aurania, London, 3 cs.

METAL COATED PAPER

Globe Shipping Co., New York, Hamburg, 24 cs.

SURFACE COATED PAPER

Gevaert Co. of America, Pennland, Antwerp, 17 cs.; Chas. Happel, Manhattan, Hamburg, 9 cs.

COATED PAPER

Chas. Happel, New York, Hamburg, 2 cs.

COLORED PAPER

International F'd'g Co., New York, Hamburg, 18 rolls, 1 cs.

TISSUE PAPER

——, Roma, Genoa, 3 cs.; W. J. Byrnes, Aurania, London, 4 cs.

DECALCOMANIAS

Sellers Transportation Co., New York, Hamburg, 10 cs.; L. A. Consmiller, New York, Hamburg, 5 cs.; L. A. Consmiller, Berlin, Bremen, 2 cs.; Sellers Transportation Co., Bremen, Bremen, 13 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Georgic, Liverpool, 12 cs. (duplex).

BOWL PAPER

Hurley Johnson Corp., Franconia, Liverpool, 35 bls.

PARCHMENT PAPER

Dingelstedt & Co., Berlin, Bremen, 8 cs.

MISCELLANEOUS PAPER

Keuffel & Esser Co., Manhattan, Hamburg, 12 cs.; Japan Paper Co., Aurania, London, 1 cs.; Keller Dorian Paper Co., Champlain, Havre, 3 cs.; A. A. Stein, Champlain, Havre, 12 cs.; Standard Products Corp., Champlain, Havre, 17 cs.

RAGS, BAGGING, ETC.

M. Snedekar Corp., Winona County, Belfast, 258 bls. paper stock; E. J. Keller Co., Inc., Black Heron, ——, 143 bls. bagging; ——, California, Glasgow, 17 bls. paper stock; T. D. Downing & Co., California, Glasgow, 88 bls. bagging; W. Steck & Co., Exeter, Marseilles, 40 bls. rags; P. Garvan, Inc., Siboney, Havana, 81 bls. rags; Jaffe Products Co., Siboney, Havana, 33 bls. rags; E. J. Keller Co., Inc., Savoia, ——, 81 bls. rags; E. J. Keller Co., Inc., Kwanto, Maru, ——, 100 bls. rags.

HIDE GLUE

——, New York, Hamburg, 100 bags.

OLD ROPE

Banco Coml Italiane Trust Co., Berlin, Bremen, 60 coils; W. Steck & Co., Black Heron, Rotterdam, 69 coils; E. J. Keller Co., Inc., Kelso, ——, 77 coils.

CHINA CLAY

J. Dixon Crucible Co., New York, Hamburg, 500 bags.

CASEIN

D. C. Andrews & Co., New York, Hamburg, 70 bags.

WOOD PULP

Castle & Overton, Inc., New York, Hamburg, 115 bls. wood pulp, 223 tons; Lagerloef Trading Co., Carplaka, Wiborg, 2450 bls. sulphite, 444 tons; Lagerloef Trading

Co., Carplaka, Kotka, 400 bls. sulphite, 80 tons; Bulkley Dunton & Co., Carplaka, ——, 750 bls. chemical, 150 tons; Castle & Overton, Inc., Black Heron, Rotterdam, 683 bls. wood pulp, 116 tons; ——, Hallaren, Gefle, 750 bls. sulphite; Stora Kopparberg Corp., Hallaren, Shutskar, 1600 bls. woodpulp; M. Sone, Hamburg, Hamburg, 166 bls. wood pulp.

WOOD PULP BOARDS

Lagerloef Trading Co., Carplaka, Kotka, 68 bls, 10 tons.

PORTLAND IMPORTS

WEEK ENDING DECEMBER 30, 1933

Gottesman & Co., Inc., Kelkheim, Sweden, 6500 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING DECEMBER 30, 1933

G. W. Millar & Co., Winona County, Dublin, 65 bls. paper stock; G. F. Malcolm, Georgic, Liverpool, 14 cs. tissue paper; Oxford University Press, Georgic, Liverpool, 8 cs. printing paper; ——, Georgic, Liverpool, 224 bags hide cuttings; Gottesman & Co., Inc., Rydbiholm, Sweden, 3190 bls. wood pulp.

NEW LONDON IMPORTS

WEEK ENDING DECEMBER 30, 1933

Lagerloef Trading Co., Carplaka, Wiborg, 2900 bls. sulphate, 606 tons; ——, Carplaka, Kotka, 119 rolls news print.

PHILADELPHIA IMPORTS

WEEK ENDING DECEMBER 30, 1933

——, Winona County, Glasgow, 258 bls. waste paper; Castle & Overton, Inc., Indep. Hall, Bordeaux, 91 bls. rags; Castle & Overton, Inc., Indep. Hall, St. Nazaire, 56 bls. rags; Lagerloef Trading Co., Carplaka, Wiborg, 9330 bls. sulphite, 1798 tons, 1752 bls. sulphite, 292 tons; Lagerloef Trading Co., Carplaka, Kotka, 260 bls. sulphate, 52 tons, 1610 bls. sulphite, 322 tons; J. W. Hampton, Jr., Carplaka, Kotka, 150 rolls news print; Gottesman & Co., Inc., Carplaka, Iggesund, 6670 bls. sulphite, 1334 tons; Gottesman & Co., Inc., Hallaren, Gefle, 2000 bls. sulphite; Bulkley Dunton & Co., Hallaren, ——, 125 bls. sulphite; Stora Kopparberg Corp., Hallaren, Skutskar, 1150 bls. wood pulp; Gilman Paper Co., Hallaren, Norrkoeping, 1741 rolls news print; ——, Hallaren, Norrkoeping, 500 bls. sulphate; Castle & Overton, Inc., Hallaren, Konigsberg, 4705 bls. wood pulp; E. J. Keller Co., Inc., Westerwald, ——, 74 bls. rags; M. Sone, Carlsholm, Gothenburg, 2825 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING DECEMBER 30, 1933

Congoleum Nairn Co., Winona County, Glasgow, 85 bls. rags; W. H. Masson, Winona County, Glasgow, 70 coil-sold rope; Congoleum Nairn Co., Indep. Hall, Bordeaux, 474 bls. rags; Congoleum Nairn Co., Indep. Hall, St. Nazaire, 94 bls. rags; Bulkley Dunton & Co., Bloomresdyk, ——, 770 bls. wood pulp; Bulkley Dunton & Co., Stureholm, ——, 1565 bls. wood pulp; Gottesman & Co., Inc., City of Newport News, Czecho-Slovakia, 2068 bls. wood pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING DECEMBER 30, 1933

Bulkley Dunton & Co., Gonzenheim, ——, 1000 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING DECEMBER 30, 1933

Champagne Paper Corp., Indep. Hall, St. Nazaire, 920 cs. cigarette paper.

NEW ORLEANS IMPORTS

WEEK ENDING DECEMBER 30, 1933

Gottesman & Co., Inc., Blankaholm, Sweden, 600 bls. wood pulp.

Indianapolis Outlook Improved

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., January 2, 1934—While trade volume last week, due to the holiday, was not anything to brag about, the paper industry in this state enters the new year with better promise than a year ago. From mid-summer until the end of the year, with intermittent slumps in volume, there has been more business than during the same period a year ago and indications point strongly to further increases. The paper jobbers are taking stock over the year-end and inventories are small. An attempt will be made to keep them small during the first months of the new year. It is reported that contracts are being signed more readily than a year ago.

News print demand dropped radically last week, it seeming that the decline from the pre-holiday demand was greater than usual or than was warranted even with the post-holiday reaction certain. But even this has its bright aspect, for business with the larger advertisers, particularly local advertisers, including department stores, was so good before Christmas there was little stock left to promote a good sale.

The paper bag and wrapping paper field seems headed for a good first quarter. Some of the local jobbers in these commodities report that November and December sales were greater than any period since 1929 and exceeded the preceding months of 1933 by good margins. Stocks of this merchandise in dealers' hands is low and orders are expected immediately.

Containers also will move better after inventory. Manufacturers of all sorts of containers in this state are expecting only the normal suspension during the inventory period, at which time factory repairs will be made. Orders on file are better than last year and production will be resumed this week in virtually all the factories.

Paper stock men continue dissatisfied with mill prices though the prices on finer stock remain stationary. Few sales are being made in cheaper grades.

Japan's Paper Output Greater

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 27, 1933—Production of foreign style paper in Japan according to the Japan Paper Manufacturers' Association, totaled 62,151 short tons during September, an increase of 1,812 tons over the previous month, according to a report from Assistant Trade Commissioner Donald W. Smith, at Tokyo.

The total production of foreign style paper during the first nine months of this year by the members of the association came to 526,818 tons, an increase of 39,683 tons compared with the corresponding period in 1932. Sales during September amounted to 65,984 tons, bringing the total for the nine months period up to 526,999 tons, an increase of 28,954 tons over the corresponding period of 1932.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, January 3, 1933.

Now that the Yuletide holidays are over and the inventory period practically ended, more active trading is confidently anticipated in the local paper market. With the National Recovery Code for the paper industry now in effect the outlook for the future is brighter than for some time past. Sales forces of the leading paper organizations are preparing for a strenuous campaign and are generally optimistic.

The statistical position of the news print paper market continues to improve. Advertising volume in the leading newspapers showed a satisfactory gain during the last quarter of the past year compared to the corresponding period of 1932. Stocks at the mills are below normal and prices are becoming more stable.

Following the usual custom, production of paper board was curtailed during the holiday weeks. Prices of the various grades continue steady. The fine paper market is displaying a strong undertone. Tissues are holding firmly. The coarse paper market is sharing the general improvement and kraft wrapping paper quotations are well sustained.

Mechanical Pulp

The ground wood pulp market has been marking time during the holidays. Manufacturing operations continue to be keyed to consumption, both in the United States, Canada and abroad. The contract movement is well up to average. Prices are holding to previously quoted levels, without difficulty.

Chemical Pulp

Trading in the chemical pulp market is moderately active, due mainly to the seasonal lull caused by the holidays and the inventory period. Quotations on the various foreign and domestic grades are steady to firm. Bleached sulphite pulp is still quoted at from $2.75 to $2.85 per 100 pounds, on dock, Atlantic, Gulf, and West Coast ports.

Old Rope and Bagging

The old rope market is listless. Demand for both domestic and imported old manila rope is restricted at present. Small mixed rope is fairly active. Prices are holding to schedule. Some improvement was noticed in the bagging market. Scraps and gunny bagging are in better request. Roofing bagging is firmer.

Rags

Steadiness prevails in the domestic rag market. Although demand for new cotton rags has been light, offerings are decidedly scarce, with the result that prices are firmer. Export request for No. 1 white shirt cuttings continues brisk. Roofing grades are stronger. The imported rag market is affected by the foreign exchange situation.

Waste Paper

The paper stock market is exhibiting a strong undertone. Collections have fallen off perceptibly, due to heavy snow storms and the severely cold weather. The lower grades of waste paper are holding up well. The higher grades are more buoyant, especially hard and soft white shavings and white envelope cuttings.

Twine

Conditions in the local twine market continue fairly satisfactory. Demand for the various grades during the past three months has been excellent and the future outlook is considered bright, in most quarters. Prices are generally steady to firm and reports of concessions are infrequent.

Pres. Graustein Looks for Improvement

Archibald R. Graustein, president of the International Paper Company issued the following statement January 1:

"Substantially increased volume of consumption of pulp and paper with higher prices for almost all grades except news print gave International Paper and Power Company in the third quarter of 1933 its first net profit since 1931. First signs of improvement appeared in April after a steady decline in both volume and prices that lasted over three years and brought the Company's gross sales of pulp and paper down by more than $37,000,000 (over one-third) between 1930 and 1932.

"A special study made in the autumn showed that in the short space of time between June and October the number of employees rose 25 per cent, or from 10,743 to 13,468 while payrolls increased from the annual rate of $11,760,000 to $15,645,000, or 33 per cent. All mills of International Paper Company and subsidiaries in the United States are covered in these figures.

"In recent months there has been some recession from the high volume of shipments of specialty grades but prices have continued stable. The relatively more gradual improvement in newsprint sales has been better maintained. News print prices are below 1932 levels and no immediate increase is to be expected—certainly none before April 1, 1934—but the adoption of the news print code and the formation of the News Print Export Manufacturers Association of Canada have imparted a distinctly better tone to the market for that product.

"We look for better business and better results in 1934 than in 1933."

New England TAPPI to Meet at Holyoke

The New England Section of TAPPI will meet at the Nonotuck Hotel, Holyoke, Mass., Friday evening, January 12, 1934 at 6:30. One of the speakers will be Charles Clarkson, vice-president of the International Printing Ink Company of New York, who will talk on Graphic Arts Problems. The other speaker will be Horace Potter, secretary of Printing House Craftsmen of the Connecticut Valley. The guests of the meeting will be the members of the Printing House Craftsmen.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, January 3, 1934.

BLANC FIXE.—No radical changes were reported in the blanc fixe market. Prices are holding to schedule. The pulp is quoted at from $42.50 to $45.00 per ton, in bulk; while the powder is selling at from 3½ cents to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—The bleaching powder market is displaying a strong undertone. Contract shipments are moving in good volume. Prices are holding to formerly quoted levels. Bleaching powder is quoted at from $1.90 to $2.15 per 100 pounds, in drums, at works.

CASEIN.—The casein market is fairly active. Domestic standard ground is quoted at 11¾ cents and finely ground at 12 cents per pound. Argentine standard ground is selling at 15½ cents and finely ground at 16 cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Steadiness prevails in the caustic soda market. Contract shipments are moving in good volume. Solid caustic soda is quoted at from $2.60 to $3.10 while the flake and ground are selling at from $3.00 to $3.05 per 100 pounds, in large drums, at works.

CHINA CLAY.—The china clay market is practically marking time until after the holidays. Prices are firm. Imported china clay is quoted at from $12 to $17 per ton, ship side; while domestic paper making clay is selling at from $5 to $12 per ton, at mine.

CHLORINE.—Conditions in the chlorine market are improving. The contract movement is well up to average. Prices are holding to schedule. Chlorine is quoted at from $2.00 to $2.25 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The position of the rosin market is unchanged. Grades of gum rosin used in the paper mills are quoted at from $4.75 to $4.90 per 280 pounds, in barrels, at works; while wood rosin is selling at $3.90 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Trading in the salt cake market is brisk. The contract movement is normal. Salt cake is quoted at from $12 to $14 and chrome salt cake at from $12 to $12.50 per ton, at works; while foreign salt cake is selling at from $12 to 12.50 per ton, on dock.

SODA ASH.—The soda ash market is displaying strength. Contracts for 1934 are being booked in good volume. Prices continue firm. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, 1.10; in bags, $1.40; and in barrels, $1.50.

STARCH—Due to the holidays and the inventory period, the starch market is rather quiet. Prices are holding to schedule without difficulty. Special paper making starch is quoted at $2.67 per 100 pounds, in bags; and at $2.95 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—The sulphate of alumina market is firmer. Shipments against contract are fairly heavy. Commercial grades are now quoted at from $1.35 to $1.50; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR—The sulphur market continues steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Business in the talc market is rather quiet. Prices are generally holding to formerly quoted levels. Domestic talc is quoted at from $16 to $18 per ton, in bulk, at eastern mines; while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	—
Bonds	6.00	@	—
Index	6.00	@	—
Writings—			
Extra Superfine	6.50	@	—
Superfine	6.25	@	—
Tub sized	5.75	@	—
Engine sized	5.50	@	—
Book, Cased—			
S. & S. C.	5.50	@	—
S. & S. C. Litho.	5.75	@	—
M. F.	5.25	@	—
Coated and Enamel	6.15	@	9.30
Coated Litho	6.90	@	—
Tissues—Per Ream—			
White No. 1	.60	@	.80
White No. 2	.55	@	.70
Anti-Tarnish M. G. only	.75	@	.80
Colored	.80	@	1.00
Kraft	.75	@	.80
Manila	.65	@	.70
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.11	@	—
No. 2	.10	@	—
Bleached, basis 20 lbs.	.13	@	—

(Delivered New York)

News, per ton—			
Roll, contract	40.00	@	—
Rolls, spot	40.00	@	—
Sheets	45.00	@	—
Side Runs	25.00	@	—
Kraft—			
No. 1 Domestic	4.75	@	5.00
No. 2 Domestic	3.87½	@	—
Southern	3.87½	@	—
Boards—per ton—			
News	45.00	@	50.00
Chip	42.50	@	47.50
Sgl. Mla. Ll. Chip.	52.50	@	55.00
Jute Lined Chip	52.50	@	55.00
White Patent Coated	60.00	@	65.00
Binders Boards	68.00	@	72.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	27.50	@	29.00
Dry	30.00	@	31.00

(F.o.b. Mill)

No. 1 Domestic and Canadian	22.00	@	28.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Division 1	2.85	@	—*
Division 2	2.80	@	—*
Division 3	2.75	@	—*
Prime Qualities—			
Class 1. All Prime Easy Bleaching	2.25	@	—*
Other Than Easy Bleaching—			
Class 2. Higher Than Standard	2.20	@	—*
Class 3. Standard	2.15	@	—*
Class 4. Lower than Standard	2.10	@	—

(On Dock, Atlantic Ports)

Kraft No. 1	1.75	@	1.90
Kraft No. 2	1.60	@	1.70

(F.o.b. Pulp Mill)

Kraft Domestic	1.60	@	2.75
Soda Bleached	2.50	@	—

* Add 5 Cents for Albany and 15 Cents for Lake Ports.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	6.50	@	7.00
Silesias No. 1	4.25	@	4.50
New Unbleached	6.75	@	7.25
New Soft Blacks	3.00	@	3.25
Blue Overall	4.00	@	4.25
Fancy	2.50	@	2.75
Washables	1.75	@	2.00
Mixed Khaki Cuttings	3.00	@	3.25
O. D. Khaki Cuttings	3.75	@	4.00
Men's Corduroy	1.50	@	1.75
New Mixed Blacks	2.50	@	2.75

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	@	3.25
White, No. 2—			
Repacked	1.75	@	2.25
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.50	@	1.75
Miscellaneous	1.25	@	1.50
Black Stockings	2.50	@	3.00
Roofing Rags—			
No. 1	.65	@	.70
No. 2	.50	@	.60
No. 3	.40	@	.50
No. 4	.35	@	.40
No. 5A	.30	@	.35

Foreign Rags

New Rags

New Dark Cuttings	1.50	@	1.60
New Mixed Cuttings	1.60	@	1.70
New Light Silesias	3.50	@	3.75
Light Flannelettes	3.25	@	3.50
Unbleached Cuttings	5.75	@	6.00
New White Cuttings	5.50	@	6.00
New Light Oxfords	3.25	@	3.50
New Light Prints	2.75	@	3.00

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	3.75	@	4.00
No. 2 White Cotton	3.00	@	3.25
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.60	@	1.75
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	1.65	@	1.80
French Blue Linens	2.10	@	2.25
German Blue Linens	1.85	@	2.00
German Blue Cottons	1.50	@	1.60
Checks and Blues	1.30	@	1.40
Lindsay Garments	1.10	@	1.15
Dark Cottons	1.25	@	1.35
Old Shopperies	.85	@	.90
New Shopperies	.80	@	.85
French Blues	1.50	@	1.65

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.35	@	1.45
Domestic	1.25	@	1.35
Wool Tares, light	1.05	@	1.15
Wool Tares, heavy	1.05	@	1.15
Bright Bagging	1.00	@	1.10
Manila Rope—			
Foreign	2.50	@	2.75
Domestic	2.50	@	2.75
Small Mixed Rope	1.10	@	1.35
New Burlap Cut	1.50	@	1.75
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.50	@	2.60
Ordinary Hard White No. 1	2.20	@	2.30
Hard White No. 2	2.00	@	2.10
Soft White No. 1	1.85	@	1.95
Flat Stock—			
Stitchless	.80	@	.90
Overissue Mag.	.80	@	.90
Solid Flat Book	.65	@	.75
Crumpled No. 1	.50	@	.60
Solid Book Ledger	1.50	@	1.65
Ledger Stock	.95	@	1.05
New B. B. Chips	.30	@	.35
Manilas—			
New Env. Cut	1.55	@	1.65
New Cuttings	1.10	@	1.20
Extra No. 1 old	.75	@	.85
Print	Nominal		
Bogus Wrapper	.40	@	.50
Container	Nominal		
Old Kraft Machine—			
Compressed bales	1.10	@	1.20
News—			
No. 1 White News	1.25	@	1.30
Strictly Overissue	.55	@	.60
Strictly Folded	.35	@	.40
No. 1 Mixed Paper	.23	@	.28

ALUMINUM SULPHATE
(PAPER MAKERS' ALUM)

THE Standard Purity of this Company's product is maintained in an uncompromising degree, regardless of whether successive deliveries are from one or various of the Company's Works.

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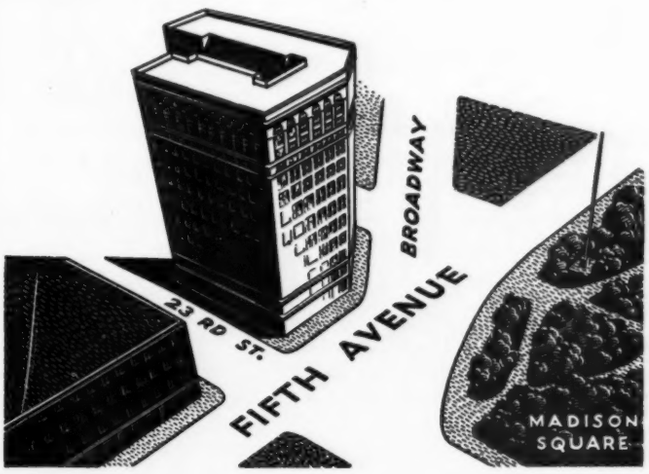
THE Earth's FIFTH CORNER



From the four corners of the earth come buyers to the Fifth Avenue Building—*the Earth's Fifth Corner.* Situated at the intersection of the world's two most famous avenues—Fifth Avenue and Broadway—the Fifth Avenue Building is at the center of business Manhattan. Sales and executive offices of many internationally known concerns are located here because it offers advantages in point of service, transit facilities and prestige, that are unequaled.

The Paper Trade is well represented. Among the tenants of this famous building are manufacturers of Paper and Pulp, Paper Mill Supplies and Machinery, Paper Box Board and Paper Products, as well as many makers of finished paper products such as stationery, greeting cards, playing cards, paper novelties and toys, etc.

A strategic location—an address that commands respect—modern accommodations, efficient service. Those are some of the advantages of The Fifth Avenue Building. It is but ten minutes from the Pennsylvania Station and thirteen from Grand Central. Buses and surface cars pass the doors. Convenient to hotels. Subway entrances in the building. Smart new restaurant on the ground floor. Efficient elevator service. Information booth in lobby. We would like to tell you more. Why not let us show you through the building?

THE FIFTH AVENUE BUILDING

FIFTH AVENUE AND BROADWAY AT MADISON SQUARE, NEW YORK

"More than an office building"

Twines
(F. o. b. Mill)

Cotton—			
B. C. 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.15½	@	.16½
No. 2	.15	@	.16
Tube Rope—			
4-ply and larger	.09¼	@	.09¾
Fine Jute Rope—			
4-ply	.11¼	@	.11¾
3-ply	.14¼	@	.14¾
2-ply	.14¼	@	.14¾
Paper Makers Twine	.08¼	@	.13¼
Box Twine, 2-3 ply	.14¼	@	.14¾
White Hemp	.13¼	@	.16¾
Java Sisal—			
No. 1 Basis	.11½	@	—
No. 2 Basis	.10½	@	—
New Zealand Sisal	.11½	@	—
Sisal Lath Yarn—			
No. 1	.13½	@	.15½
No. 2	.11½	@	.13½
Manila Twine	.24½	@	.29½

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.16	@	.50
Water Marked Sulphite Bond	.07½	@	.12
Sulphite Bond	.04	@	.11
Superfine Writing	.18	@	.24
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¼	@	.07¼
No. 2 S.&S.C. Book	.05¼	@	.06¼
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04¼	@	.05¼
No. 1 Fibre	.04¼	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Pulp Boards	.04¼	@	.05¾
Jute Screenings	.02	@	.03¼
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	41.00	@	—
Sheets, open	46.00	@	51.00
Boards, per ton—			
Plain Chip	37.50	@	—
Solid News	43.50	@	—
Manila Lined Chip	47.50	@	—
Patent coated	55.00	@	—
Container Lined—			
85 Test	60.00	@	65.00
100 Test	60.00	@	70.00

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	1.70	@	1.80
No. 1 Hard White	1.40	@	1.50
No. 1 Soft White	1.20	@	1.30
Ledger & Writings	.70	@	.80
Solid Books	.60	@	.70
Blanks	1.00	@	1.05
Kraft	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.50	@	.55
Overissue News	.60	@	.70
Old Newspapers			
No. 1	.55	@	.60
Mixed Papers—			
No. 1	.30	@	.40
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.04	@	.40
Ledgers	.06	@	.40
Writings—			
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Fine No. 3	.05½	@	.18
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.06	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.06	@	.10
Manila Sul., No. 1	.03	@	.06
Manila No. 2	.03	@	.05
No. 1 Kraft	.05¼	@	.06½
No. 2 Kraft	.03¾	@	.05
Southern Kraft	2.75	@	4.00
Common Bogus	.03	@	.04½

(Delivered Philadelphia)

News Print Rolls	46.00	@	55.00
Straw Board	40.00	@	45.00
News Board	50.00	@	—
Chip Board	45.00	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1 50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.03½	@	.04
New White, No. 2	.02½	@	.04
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01½	@	.02
Blue Overall	.03½	@	.04
Cottons—According to grades—			
Washable, No. 2	.02½	@	.03
New Blue	.01½	@	.03
Fancy	.01½	@	.03
New Black Soft	.02	@	.04
New Light Seconds	.01½	@	.02
New Dark Seconds	1.50	@	1.75
Khaki Cuttings—			
No. 1 O.D.	.03	@	.04
No. 2 Mixed	.03	@	.04
Corduroy	.02	@	.03
New Canvas	.03½	@	.04½
New Black Mixed	.02½	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.50
Miscellaneous	1.75	@	2.25
M. G.	3.00	@	3.75
Thirds and Blues—			
Miscellaneous	1.00	@	1.50
Repacked	1.50	@	2.00
Black Stockings (Export)	2.00	@	3.50
Roofing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.85

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	1.75
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.25	@	2.30
No. 2 Hard White	2.00	@	2.10
No. 1 Soft White	2.05	@	2.10
No. 2 Soft White	1.15	@	1.25
No. 1 Mixed	.95	@	1.00
No. 2 Mixed	.75	@	.80
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.05	@	1.10
No. 1 Books, heavy	.80	@	.90
No. 2 Books, light	.70	@	.75
No. 1 New Manila	1.20	@	1.50
No. 1 Old Manila	.85	@	.90
Print Manila	.75	@	.80
Container Manila	.60	@	.65
Old Kraft	.90	@	1.05
Common Paper	.35	@	.40
No. 1 Mixed Paper	.35	@	.40
Straw Board Chip	.35	@	.40
Binders Board Chip	.35	@	.40
Corrugated Board	.50	@	.60
Overissue News	.55	@	.60
Old Newspapers	.40	@	.50

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.05½	@	.11
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04¾	@	.05
No. 2 Kraft	.03⅞	@	.04⅛

(F. o. b. Boston)

Southern Kraft	.03⅞	@	.04⅛

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¾

(Delivered New England points)

News Print, rolls	44.50	@	—
Straw Board, rolls	.009	@	35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	45.00	@	50.00
Chip Board	42.50	@	47.00
Chip Board (Creasing)	45.00	@	—
Single Manila Lined Chip	52.50	@	62.50
Single White, Patent Coated News Board—Bender	62.50	@	72.50
Wood Pulp Board	70.00	@	75.00
Binder Boards	62.00	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.40	@	—
No. 1 Soft White	1.75	@	2.00
No. 1 Mixed Papers	.22½	@	.27½
Old Newspapers	.40	@	.42½
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.40	@	1.50
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	1.00	@	1.10
No. 1 Books, heavy	.85	@	.95
No. 1 Books, light	.65	@	.75
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.25	@	1.30
No. 1 Old Manila	.95	@	1.05
White Blank News	1.15	@	1.25
No. 1 Kraft	—	@	1.00
Manila	.75	@	.80
No. 1 Mixed Papers	.20	@	.25
Print Manila	.45	@	.50
Overissue News	.55	@	.60
Old Newspapers	.37½	@	.42½
Box Board Chips	.32½	@	.35
Corrugated Boxes	.27½	@	.35
Screening Wrappers	.60	@	.70

Bagging
(F. o. b. Boston)

Manila Rope—			
Foreign	2.50	@	—
Domestic	—	@	2.50
Transmission Rope	1.60	@	—
Mixed Strings	—	@	.60
Jute Rope	1.15	@	1.35
Jute Carpet Threads	.65	@	.70
Gunny No. 1—			
Foreign	1.35	@	1.45
Domestic	1.00	@	1.10
Bleachery Burlap	3.00	@	3.25
No. 1 Scrap Burlap	1.40	@	—
Scrap Sisal	1.25	@	1.35
Scrap Sisal for shredding	1.25	@	1.35
Wool Tares, heavy	—	@	1.05
New Burlap Cuttings	1.15	@	1.25
Australian Wool Pouches	2.25	@	2.50
Heavy Baling Bagging	1.40	@	1.50
Paper Mill Bagging	—	@	.75
Bagging No. 2	.50	@	.60

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.02	@	.02¼
New White No. 1	.06½	@	—
New White No. 2	.04½	@	.05
Silesias No. 1	.04	@	—
New Black Silesias	.02½	@	.03
New Unbleached	.07	@	.07¼
Blue Cheviot	—	@	4.65
Fancy	—	@	.02½
Washable	.02¼	@	—
Cottons—According to grades—			
Blue Overalls	—	@	.03¼
New Black, soft	.04	@	.04½
Khaki Cuttings	.03	@	.03¼
O. D. Khaki	.03	@	.03¼
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	—	@	.06¼

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.00	@	2.25
White No. 2—			
Repacked	.01½	@	.01¾
Miscellaneous	.01½	@	.01¾
Twos and Blues	1.25	@	1.50
Thirds and Blues			
Repacked	1.10	@	1.25
Miscellaneous	.85	@	.90
Black Stockings	2.25	@	2.50
Roofing Stock—			
No. 1	.60	@	.65
No. 2	.55	@	.60
No. 3	.35	@	.45

Foreign Rags
(F. o. b. Boston)

Dark Cottons	1.10	@	—
New White Shirt Cuttings	5.50	@	6.00
Dutch Blues	2.00	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.55	@	1.60
Old Linsey Garments	—	@	1.10

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.10¼	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.10¾	@	—
No. 2 Colored	.09	@	.10
Ledgers (sulphite)			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.20	@	—
No. 3 M. F. (Carloads)	5.70	@	—
No. 4 M. F. (carloads)	4.75	@	—
No. 1 S. C. (carloads)	6.65	@	—
No. 3 S. C. (carloads)	6.20	@	—
No. 4 S. C. (carloads)	5.20	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.25	@	—
White Wrap	2.22½	@	—
"B" Manila	4.75	@	—
No. 1 Manila	5.25	@	—
Fiber	5.25	@	—
Kraft, M. F.	5.75	@	—
Kraft No. 2	5.25	@	—

(F.O.B. Cars Toronto)

News, per ton—			
Rolls (contract)	45.50	@	—
Sheets	50.50	@	—

Pulp
(F. o. b. Mill)

Ground Wood	18.00	@	20.00
Sulphite easy bleaching	40.00	@	—
Sulphite, news grade	38.00	@	—
Sulphite, bleached	50.00	@	55.00
Sulphate	50.00	@	—

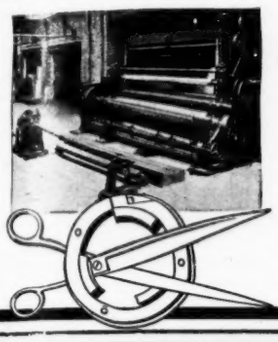
Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.10
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.50
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.50
Printed Manilas	.70	@	—
Kraft	1.25	@	1.50
News and Scrap—			
Strictly Overissue	1.00	@	—
Strictly Folded	.70	@	—
No. 1 Mixed Paper	.60	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.05¼	@	.05½
Fancy Shirt Cuttings	.02¼	@	.02½

LANGSTON SLITTERS

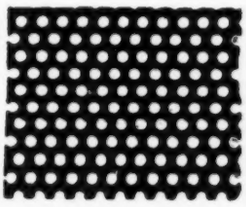


FOR clean, square-edged, tightly wound rolls, Langston Slitters are unequaled. The Shear-Cut parts the paper cleanly—instead of *crushing* it. Ask for details.

Samuel M. Langston Co., Camden, N. J.

Perforated Metal Screens

For Pulp and Paper Mills



".065" Round

STEEL, COPPER, BRASS, BRONZE, MONEL METAL and other Alloys punched for Centrifugal and Rotary Screens, Pulp Washers, Drainer Bottoms, Filter Plates, etc.

CHARLES MUNDT & SONS

63-65 FAIRMONT AVE. JERSEY CITY, N. J.

PERFECTION GUMMED PAPERS

All that the Name Implies

"THEY ARE ABSOLUTELY FLAT"

ASK FOR SAMPLE BOOK WITH COMPLETE DATA AND PRICES

PAPER MANUFACTURERS CO. INC.

PHILADELPHIA, PA.

Langdon Manufacturing Co.

Collapsible Winder Shafts

Full range of sizes for all purposes

Sturdy all-steel construction

High speed.....Quick Acting

For Particulars write Box 517, Portland, Ore.

PULP MILL MACH'Y FINISHING ROOM MACH'Y

— FRICTION CLUTCHES —

THE MOORE & WHITE CO.

PHILADELPHIA, PA.

N. PHILA. STA. PENNA R.R.

PAPER MILL MACHINERY

EMERSON JORDANS

THE EMERSON MANUFACTURING CO.

LAWRENCE—MASSACHUSETTS

5772

Dietz Towel Interfolding Machines

also

TOILET PAPER MACHINES

For making Toilet and Paper Towel Rolls (With or without perforations)

AUTOMATIC TUBE MACHINES

For Making Wire-Stitched Toilet Tubes

Sanitary Crepe Towel Machines, Roll Tighteners, Slitting and Rewinding Machines, Drop Roll Slitting Machines, Photo Mount Beveling Machines, Rotary Card Cutting Machines, etc.

Correspondence solicited

DIETZ MACHINE WORKS

126-128 W. Fontaine Street

Cor. Waterloo St. (between Front & Second Sts.) and below Diamond St.

Phila., Penna., U. S. A.

UNION SCREEN PLATE COMPANY

Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

UNION BRONZE SCREEN PLATES FOR FLAT SCREENS

Old Plates Reclosed and Re-cut to Accurate Gauge.

Rolled Phosphor Bronze and Copper Plates for Rotary Screens

Sole Manufacturers of the

UNION-WITHAM SCREEN PLATE VAT AND FASTENER

GIANT

RAGS — BURLAP

BAGGING — ROPE

JUTE BUTTS, MAGAZINES, CATALOGS OLD PAPERS, THREAD WASTE AND ALL GRADES OF RAGS CUT QUICKLY AND EFFICIENTLY WITH THE

TAYLOR, STILES & COMPANY trade mark GIANT REG. U.S. PAT. OFF. RIEGELSVILLE, N.J. U.S.A.

This is the GIANT 2A CUTTER WITH A CAPACITY OF 3000 lbs. PER HOUR

GIANT RAG CUTTERS HAVE CAPACITIES OF FROM 1 to 5 tons per hour.

THE STANDARD OF THE WORLD FOR 60 YEARS

TAYLOR, STILES & COMPANY

RIEGELSVILLE, N. J.

CANADIAN REPRESENTATIVES

Waterous Engine Works Company, Ltd., Brantford, Ont., Canada

SOLE AGENTS FOR EUROPE

A. J. Marx, 133-139 Finsbury Pavement, London, E. C.

The CLEARING HOUSE of THE PAPER TRADE

"SITUATIONS WANTED" ADVERTISEMENTS—4c a word, double rates for heavy face type. Minimum charge $1.00. If repeated ½ rate will be charged for each consecutive repetition.

"HELP WANTED" ADVERTISEMENTS—4c a word. Double rate for heavy face type. Minimum charge $1.00.

CLASSIFIED ADVERTISEMENTS—4c a word. Double rate for heavy face type. Minimum charge $1.00.

All classified "Help Wanted" and "Situation Wanted" advertisements are payable in advance.

HELP WANTED

SALARIED POSITIONS. $2,500 to $25,000. This thoroughly organized advertising service of 24 years' recognized standing and reputation carries on preliminary negotiations for positions of the calibre indicated, through a procedure individualized to each client's personal requirements. Several weeks are required to negotiate and each individual must finance the moderate cost of his own campaign. Retaining fee protected by a refund provision as stipulated in our agreement. Identity is covered and, if employed, present position protected. If you have actually earned over $2,500, send only name and address for details. R. W. Bixby, Inc., 117 Delward Bldg., Buffalo, N. Y.

WANTED—1st class gummed tape salesman on commission basis for Middle West, State experience. Address Box 34-1, care Paper Trade Journal. J-4

WANTED—A man who is well known to manufacturers of paper, who can make his own contacts with a view of selling bituminous coal. Must be experienced in either selling or purchasing bituminous coal. Reply by letter giving detailed experience, age, references, etc. Address Box 34-2, care Paper Trade Journal. J-4

SITUATIONS WANTED

COST ACCOUNTANT—Young man, at present employed, desires change. Eight years experience on paper and pulp mill costs. Address Box 33-565, care Paper Trade Journal. J-11

COLORMAN and boss beaterman wants position. Experienced in bleached and unbleached papers, Glassine, Greaseproof, Kraft, Tissue, Crepe, Butchers, Bond, Mimeograph, Water finish, etc. Address Box 33-578, care Paper Trade Journal. J-11

SUPERINTENDENT wants position. Experienced in Glassine, Greaseproof, Bond, Mimeograph, Wrapper, Tissue, Butchers, Kraft, Crepe, Water Finish, etc., on Fourdrinier and Yankee Machines. Some experience in making sulphite and bleaching. Color specialist. Address Box 33-577, care Paper Trade Journal. J-11

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OF THE PAPER AND ALLIED TRADES

1934 EDITION

CORRECTED UP-TO-DATE

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Pennsylvania Salt Co.

AMMONIA, Aqua
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Jenssen Company, G. D.
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Simons, V. D.
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Asten-Hill Mfg. Co.

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Gatke Corporation

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S. K. F. Industries
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Goodyear Tire & Rubber Co.
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Merritt Engineering & Sales Corp., The

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Lobdell Car Wheel Co.
Perkins & Son, Inc., B. F.
Textile Finishing Mchy. Co.
Waldron Corp., John

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Smith & Winchester Mfg. Co.
Ticonderoga Machine Works

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Lobdell Car Wheel Co.
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Smith & Winchester Mfg. Co.
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Lobdell Car Wheel Co.

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The Casein Manufacturing Co. of America
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Moore & White Co., The

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Beloit Iron Works

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Valley Iron Works

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Appleton Machine Co., The

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Beloit Iron Works

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Textile Finishing Machinery

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Paper Converting Machine Co.
John Waldron Corp.

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Textile Finishing Mchy. Co.
Waldron Corp., John

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Fitchburg Duck Mills
Huyck & Son, E. C.
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Moore & White Co.

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Appleton Wire Works

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Hudson Sharp Machine Co.
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Waldron, John, Corp.

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Moore & White Co.

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Appleton Wire Works
International Wire Works

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John Waldron Corp.

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De Laval Steam Turbine Co.

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Waldron Corporation, John

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Valley Iron Works

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Bahr Bros. Mfg. Co., The
Jones & Sons Co., E. D.
Smith & Winchester Mfg. Co.
Valley Iron Works

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DeZurik Shower Co.

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Valley Iron Works

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Bausch & Lomb Optical Co.

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MOULDS
Montague Machine Co.

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Waldron, John, Corp.

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Smith & Winchester Mfg. Co.

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PAPER DAMPENERS
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PAPER DUSTERS
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Moore & White Co.

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West Virginia Pulp & Paper Co.

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PAPER AND BOARD CUTTERS
Beloit Iron Works

PAPER AND PULP MACHINERY
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Lobdell Car Wheel Co.
Moore & White Co.
Paper & Textile Machinery Co.
Perkins & Son, Inc., B. F.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

PAPER ROLLS
Textile Finishing Machy. Co
Waldron Corp., John

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Thwing Instrument Co.

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PAPER STOCK WASHERS
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PAPER TESTERS
Perkins & Son, Inc., B. F.
Thwing Instrument Co.
Valley Iron Works Co.

PAPER TUBES
Climax Tube Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Samuel M. Langston Co.

PAPER WAXING MACHINERY
Waldron Corporation, John

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Arabol Manufacturing Co.

PASTING MACHINES
Potdevin Machine Co.

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Thwing Instrument Co.

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Dietz Machine Works
Waldron, John, Corp.

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Hendrick Mfg. Co.

PIPE (Stainless)
Mundt & Sons, Charles
National Tube Co.

PLATING, CHROMIUM
Chromium Corp. of America

PLATERS
Perkins & Son, Inc., B. F.

PLAYING CARD MACHINERY
Waldron, John, Corp.

POWER TRANSMISSION EQUIPMENT
De Laval Steam Turbine Co.
Farrel-Birmingham Co.

PRECISION INSTRUMENTS
Thwing Instrument Co.

PRESSES (Napkin)
Paper Converting Machine Co.
Waldron Corp., John

PRESS ROLLS
American Wringer Co., Inc.
Beloit Iron Works
Emerson Manufacturing Co.
Goodrich Rubber Co.
Hunt Machine Co., Rodney
Montague Machine Co.
Stowe-Woodward, Inc.
Valley Iron Works Co.

PRESS ROLLS (Granite)
Beloit Iron Works
Perkins & Sons, Inc., B. F.

PRESSURE BULKER
B. F. Perkins & Son, Inc.

PRINTING MACHINES
Heinrich, Inc., H. H.
Potdevin Machine Co.
Waldron, John, Corp.

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Potdevin Machine Co.
Paper Converting Machine Co., Inc.

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Norton Co.

PULP GRINDERS
Glens Falls Machine Works

PULP PRESSES
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Trimbey Machine Works

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Anderson Co., J.
Castle, Overton, Inc.
Edw. B. Murray.
Perkins-Goodwin Co.
Price & Pierce, Ltd.

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De Laval Steam Turbine Co.
Lawrence Mach. & Pump Co.
Lawrence Pump & Engine Co.
Moore & White Co.
Morris Machine Works
Valley Iron Works

PUMPS (Centrifugal)
Chain Belt Co.
Lawrence Pump & Engine Co.
Moore & White Co.
Morris Machine Works
Roots - Connersville - Wilbraham

PUMPS (Measuring)
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PUMPS (Reciprocating)
Lawrence Pump & Engine Co.
Morris Machine Works

PUMPS (Rotary Cycloidal)
Lawrence Mach. and Pump Co.
Lawrence Pump & Engine Co.
Morris Machine Works
Roots - Connersville - Wilbraham

PUMPS (Stuff)
Beloit Iron Works
De Laval Steam Turbine Co.
Dillon Machine Co.
Downingtown Mfg. Co.
Enterprise Machine Co.
Lawrence Mach. & Pump Co.
Lawrence Pump & Engine Co.
Moore & White Co.
Morris Machine Works
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

PUMPS (Stock)
Dillon Machine Co.
Enterprise Machine Co.
Lawrence Pump & Engine Co.
Morris Machine Works

PUMPS (Suction)
Lawrence Pump & Engine Co.
Moore & White Co.
Morris Machine Works

PUMPS (Vacuum)
Lawrence Mach. & Pump Co.
Lawrence Pump & Engine Co.
Morris Machine Works
Roots - Connersville - Wilbraham

PYROMETERS (Roll)
Thwing Instrument Co.

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Perkins & Son, Inc., B. F.
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RECORDING TACHOMETERS
General Electric Co.

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J. O. Ross Engrg. Corp.

RECOVERY SYSTEMS (Soda & Sulphite)
Ross Engineering Corp., J. O.

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Farrel-Birmingham Co.

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Beloit Iron Works
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Emerson Manufacturing Co.
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Bahr Bros.

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Emerson Manufacturing Co.
Jones & Son Co., E. D.

REFRACTORIES
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Norton Co.

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Merritt Engrg. & Sales Co. Inc.
Trimbey Machine Works

REGULATORS (Consistency)
Trimbey Machine Works

REGULATORS (Density)
Trimbey Machine Works

REWINDERS
Beloit Iron Works
Cameron Machine Co.
Samuel M. Langston Co.
Moore & White Co.
Smith & Winchester Mfg. Co.
John Waldron Corp.

ROD MILL
Mine & Smelter Supply Co.

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Farrel-Birmingham Co.
Lobdell Car Wheel Co.

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Cameron Machine Co.
Samuel M. Langston Co.

ROLL STANDS
Cameron Machine Co.
Moore & White Co.

ROLL WINDING MACHINES
Cameron Machine Co.

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Farrel-Birmingham Co.
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Smith & Winchester Mfg. Co.
Valley Iron Works

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Textile Finishing Machy. Co.
John Waldron Corp.

ROLLS (Calender)
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John Waldron Corp.

ROLLS (Granite, Couch, Felt)
Montague Machine Co.

ROLLS (Paper)
Goodrich Rubber Co.
Montague Machine Co.
Textile Finishing Machy. Co.
John Waldron Corp.

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Montague Machine Co.

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Dietz Machine Works
Hamblet Machine Co.
Langston Co., Samuel M.
Moore & White Co.
Smith & Winchester Mfg. Co.
Waldron Corporation, John

SOAP POWDER
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Paper Makers Chemical Corp.

SODA ASH
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Diamond Alkali Company
Mathieson Alkali Works, Inc.
Paper Makers Chemical Corp.
Pennsylvania Salt Mfg. Co.
Solvay Process Co.

SOLVENT SIZING
Beloit Iron Works

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Hamblet Machine Co.
Hudson Sharp Machine Co.
Montague Machine Co.
Paper Converting Machine Co., Inc.
John Waldron Corp.

SPEED CHANGES (Variable)
Hunt Machine Co., Rodney
Moore & White Co.

SPEED REDUCERS
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De Laval Steam Turbine Co.
Farrel-Birmingham Co.
Hunt Machine Co., Rodney

SPEED REDUCERS (Herring Bone)
De Laval Steam Turbine Co.
Farrel-Birmingham Co.

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Farrel-Birmingham Co.

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Beloit Iron Works
Moore & White Co.

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Norton Company.

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STEEL (Electric Furnace)
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American Sheet & Tin Plate Co.
Jones & Sons Co., E. D.

STEEL PLATE CONSTRUCTION
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Perkins & Sons, Inc., B. F.

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Merritt Engineering & Sales Corp., The
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Morris Machine Works
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

SUCTION BOX COVERS
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Moore & White Co.

SUCTION ROLLS
Beloit Iron Works

SULPHITE (Bleached and Unbleached)
Andersen & Co., J.
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Perkins-Goodwin Co.
Price & Pierce Ltd.

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Texas Gulf Sulphur Co.

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Beloit Iron Works
Hunt Machine Co., Rodney

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Paper Converting Machine Co., Inc.

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Dietz Machine Works

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TOWEL INTERFOLDING MACHINES
Dietz Machine Works

TOWEL FOLDING MACHINES
Paper Converting Machine Co., Inc.
Waldron Corp., John

TOWEL WINDERS
Cameron Machine Co.
Hudson Sharp Machine Co.
Waldron Corp., John

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De Laval Steam Turbine Co.
Farrel-Birmingham Co.
Hunt Machine Co., Rodney
Timken Roller Bearing Co.

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Norton Company

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Elixman Paper Core Co.

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National Tube Co.
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Hunt Machine Co., Rodney

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Hunt Machine Co., Rodney

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Enterprise Machine Co.
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Trimbey Machine Works

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Moore & White Co.

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WATER SOFTENERS
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Bennett, Inc.
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DeZurick Shower Co.
Langston Co., Sam L.
Moore & White Co.
Smith & Winchester Mfg. Co.

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American Wringer Co.

WIRE GUIDES
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John Waldron Corp.

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American Wringer Co.
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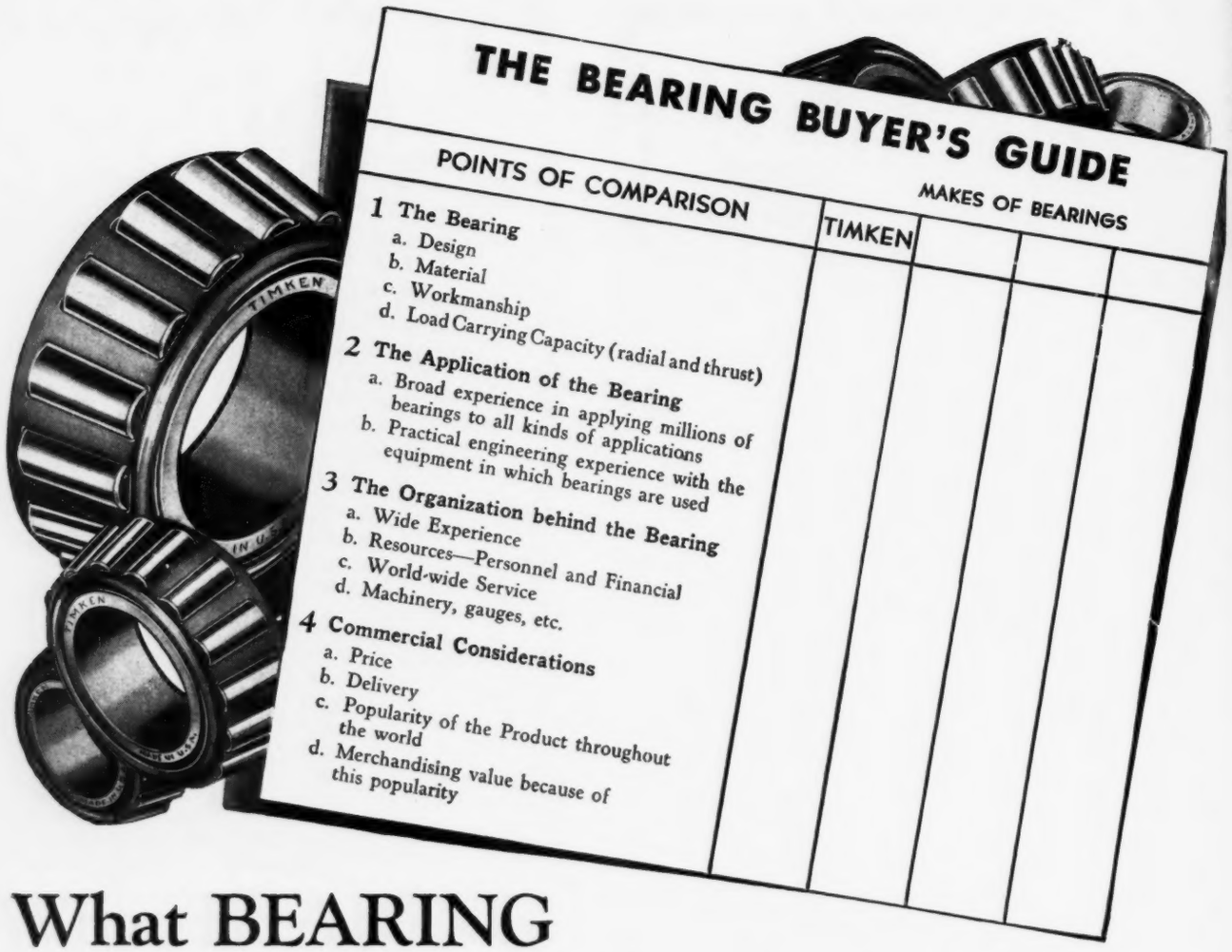
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b. Material
c. Workmanship
d. Load Carrying Capacity (radial and thrust)
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